Chapter 7

The Promise of Pakistan's Demographic Dividend?

Demographic dividend is a period of accelerated economic growth in a country stemming from favourable age structure when the share of working age population is greater than the share of dependent population. The favourable age structure is achieved through a transition from high to low fertility, which in turn is facilitated by a decline in child and infant mortality rates and investments in population welfare and family planning. However, a favourable age structure alone does not yield the dividend. Harnessing demographic dividend requires the right policy mix, including investments in education and health care to improve human capital and productivity. Furthermore, high savings and work opportunities for youth alongside good governance, competitive markets, macroeconomic stability, and other enablers of economic growth and development are needed to capitalize on the window of opportunity provided by the favourable age structure. In Pakistan, the growing population, especially the large youth cohort, provides an opportunity to reap the demographic dividend. Although the country has achieved considerable progress in lowering total fertility rates (TFR) and dependency ratios, resulting in a large youth cohort, the pace of decline in TFR has slowed in the last two decades; it has also been slower compared to peer countries. Regarding educational attainment, Pakistan's performance has remained weak in terms of its access and quality, whereas more than a third of its current 0-5 years population is estimated to be stunted. Both these factors put the prospects of demographic dividend in Pakistan at risk, as do the persistent challenges to enabling economic environment, such as macroeconomic instability, low economic growth, weaknesses in governance, and inefficient markets. Importantly, gender disparity in educational attainment and labour force also needs to be narrowed for the country to reap the demographic dividend.

7 The Promise of Pakistan's Demographic Dividend?

7.1 Introduction

Behind Pakistan's recurring macroeconomic imbalances are several structural challenges that constrain the country's economic growth and development. These include low levels of human development, domestic savings, and labour productivity. Underlying these challenges is rapid population growth that adds a burden to the need for public and private infrastructure and government spending on public goods while reinforcing poverty.[1]

Five decades ago, Pakistan ranked 10th among the world's top ten most populous countries, with a population of 59 million. In 2021, the country was ranked 5th, with a population of 231 million **(Figure 7.1).** At a compound average growth rate of 3.1 percent between the years 1980-2000, the country's population was the fastest growing among the top ten populous countries. In 2021, the growth rate was 1.9 percent, second only to Nigeria.[2] Owing to this, Pakistan has a large young population where about 37 percent and 67 percent are less than or equal to 14 and 30 years, respectively. However, this also provides the country a unique opportunity for economic growth and development in what is called the 'demographic dividend'.

Demographic dividend refers to a period of accelerated economic growth of a country stemming from favourable age structure of its population. A favourable age structure refers to a population with low dependency, which is the sum of both young age dependency,[3] and old age dependency.[4] In other words, a country achieves a favourable age structure when the share of working age population is higher than the share of dependents including both young and old; globally, the working age

Pakistan's Rank in Top Ten Populous Countries **Figure 7.1**

population in millions

Rank	1970		1980		1990		2000		2010		2020	
1	China	823 (2.6)	China	982 (1.5)	China	1154 (1.7)	China	1264 (0.7)	China	1348 (0.7)	China	1425 (0.2)
2	India	558 (2.2)	India	697 (2.3)	India	870 (2.2)	India	1060 (1.8)	India	1241 (1.4)	India	1396 (1.0)
3	USA	200 (1.2)	USA	223 (1.2)	USA	248 (1.3)	USA	282 (1.2)	USA	311 (0.9)	USA	336 (0.5)
4	Russia	130 (0.5)	Indonesia	148 (2.4)	Indonesia	182 (1.8)	Indonesia	214 (1.5)	Indonesia	244 (1.3)	Indonesia	272 (0.8)
5	Indonesia	115 (2.7)	Russia	138 (0.5)	Brazil	151 (1.8)	Brazil	176 (1.4)	Brazil	196 (0.9)	Pakistan	227 (1.7)
6	Japan	105 (1.3)	Brazil	122 (2.4)	Russia	148 (0.5)	Pakistan	154 (3.1)	Pakistan	194 (2.3)	Brazil	213 (0.7)
7	Brazil	96 (2.5)	Japan	118 (0.7)	Japan	124 (0.3)	Russia	147 (-0.3)	Nigeria	161 (2.8)	Nigeria	208 (2.5)
8	Germany	78 (0.4)	Bangladesh	84 (2.5)	Pakistan	115 (3.4)	Bangladesh	129 (1.9)	Bangladesh	148 (1.1)	Bangladesh	167 (1.2)
9	Bangladesh	68 (2.5)	Pakistan	81 (4.2)	Bangladesh	107 (2.1)	Japan	127 (0.2)	Russia	143 (0.1)	Russia	146 (-0.1)
10	Pakistan	59 (2.8)	Germany	78 (-0.2)	Nigeria	95 (2.7)	Nigeria	123 (2.6)	Japan	128 (0.0)	Mexico	126 (0.7)

Note: Values without parenthesis are total population in millions, and values in parenthesis are population growth of respective years.

Source: United Nations Population Division. World Population Prospects 2022

[1] D. Nayab, R. Haq and S. Bashir (2019). *The Dynamic of Population in Pakistan* in Population Growth: Implications for Human Development, *Development Advocate United Nations Development Programme Pakistan* Vol. 6 Issue 1.; A. H. Khan, L. Hasan, A. Malik and B. Knerr (1992). "Dependency Ratio, Foreign Capital Inflows and the Rate of Savings in Pakistan." *The Pakistan Development Review*, Vol. 31, No. 4. pp. 843-856; State Bank of Pakistan (2002). "*Chapter 11, Socio-economic Update, in the Report of the Central Board of Directors of the State Bank of Pakistan for the year ended 30th June 2002*." Karachi: SBP

[2] Source: United Nations Population Division. World Population Prospects 2022.

[3] The proportion of persons below the age of 15 years relative to those aged 15 to 64 years (ILO)

[4] The proportion of persons aged over 64 years relative to those aged 15 to 64 years. (ILO)

population is defined as all persons between 15-64 years of age.[5]

Evidence suggests that a rise in the share of working-age population increases per capita output growth.[6] In East Asia, whose miraculous economic growth between 1965 and 1990 prompted an inquiry into demographic factors, the changes in age structure is estimated to have accounted for 1.4 to 1.9 percentage points of annual GDP growth per capita for the period, which is approximately about one-third of observed economic growth during the period.[7]

Demographic dividend as a window in demographic transition

An economic growth inducing age structure is set in motion after a country's population transitions from high to low birth and death rates.[8] The transition spans several decades. First, because of gradual improvements in health, nutrition, and medical expertise,[9] the first phase of the transition begins from a state of high birth and high death rates to a state of high birth but lower death rates leading to the creation of youth bulge in the population.

Second, over time with improved food production, sanitation, and health, infant and child mortality rates gradually fall, leading to lower birth rates and higher life expectancy.[10] Accordingly, the second phase of the transition begins from high birth and low death rate to low birth and low death rate, which helps reduce total fertility rate (TFR)[11] and eventually creates a favourable working age population courtesy a rapid fall in youth dependency ratio.

The end of the second phase typically marks the onset of demographic window. During this demographic window, countries may reap the naturally occurring positive spillover of low population dependency on economic growth (or the accounting effect of demographic dividend)[12] provided the TFR continues to fall rapidly. However, a much higher demographic dividend potentially accruing from favourable age structure is realized when the TFR of country continues to fall rapidly alongside the implementation of policies that enhance the productive potential of the population.[13]

The onset of demographic window is not guaranteed in every country. If, for example, death rate falls due to initial investments in health care, but the birth rate is slow to decline leading to stagnating or a slow decline in TFR, large cohorts of youth will continue in a fast-

[5] This range is defined for international comparability given the fact that working age structure thresholds usually correspond to societal standards for education and work eligibility and are anchored in national legislation. [C. Harasty and M. Ostermeier (2020). *Population Ageing: Alternative Measures of Dependency and Implications for the Future of Work.* ILO Working Paper 5. Geneva: ILO]

[6] R. Gomez, and P. Hernandez de Cos. 2008. Does Population Ageing Promote Faster Economic Growth? *Review of Income and Wealth.* 54(3). pp. 350– 372.; Asian Development Bank (2011). *Asian Development Outlook 2011 update*. Preparing for Demographic Transition. Manila, Philippines: ADB.

[7] D.E. Bloom and J. G. Williamson (1998). Demographic transitions and economic miracles in emerging Asia. The World Bank Economic Review, 12(3), 419-455.

[8] J. N. Gribble and J. Bremner (2012). "Achieving a Demographic Dividend." *Population Bulletin*, Vol 67. Issue No. 2.

[9] A. R. Omran (1971). "The Epidemiologic Transition: A Theory of the Epidemiology of Population Change." *Milbank Quarterly*, 83(4):731-57

[10] Infant Mortality refers to probability of dying between birth and exact age 1. It is expressed as deaths per 1,000 live births. Child Mortality or under-five mortality refers to probability of dying between birth and exact age 5. It is expressed as deaths per 1,000 births. Source: Glossary of Demographic Terms, United Nations Population Division, available at: www.population.un.org/wpp/GlossaryOfDemographicTerms/, accessed on September 26, 2022.

[11] TFR is expressed as number of children per woman. (For technical definition see: www.un.org/en/development/desa/population/publications/dataset/fertility/total-fertility.asp)

[12] For details, see next sub-section

[13] D. E Bloom and D. Canning (2006). "Global Demography: Fact, Force and Future," in C. Kent, A. Park and D. Rees (eds.), *Demography and Financial Markets*, Reserve Bank of Australia.

growing population. This exposes households to risks of underinvestment in health, nutrition, skills, and education that eventually leads to higher youth dependency ratios; poverty; unemployment, or underemployment; and economic instability.[14]

However, if a country is able to create a demographic window through a consistent decline in TFR and realize the potential demographic dividend beyond the accounting effect, thethird phase of demographic transition begins when the TFR approaches replacement ratio[15], i.e. TFR of about 2.1 per woman. Eventually, when the TFR falls below the replacement rate over a period of several decades, negative population growth rate, high old-age dependency and lower share of working age population mark the end of the demographic transition as is the case with certain advanced economies such as Europe and Japan.[16]

In the process of transition, several potential scenarios may affect the age structure of the population, which in turn affects the scale, scope, and timing of the demographic window. For instance, these scenarios are determined by the size of the population at the beginning of the transition, the speed of the transition, and the duration to achieve it.

Fertility transitions do not follow a set time period as they reflect differences in culture, family values and traditions, social institutions, norms, ethnic divisions, religious beliefs, various forces of modernization and development, which vary from one country to another.[17] Other factors that affect fertility transition of a country include: urbanization, educational level of women, high costs of marriage and child-raising, basic health services that help reduce infant and child mortality; economic development and improved living standards.[18]

In Europe, fertility transition has taken more than 100 years. For instance in Sweden fertility rate was 4.2 in the 1800s, which declined to only 3.8 in 1900, but dropped to 1.5 by 1980s.[19] This is because of the a gradual shift in the evolution of family size preferences with the trend of delayed marriages and slow developments in health and nutritional science.[20] However, from 1950s onwards, fertility transitions have been faster because countries have gained the benefit of advances in human knowledge and technology. The experience of advanced economies, particularly in matters of public health and medical services, spread of education, increased women's labour force participation, as well as the beginning of family planning programmes by governments around the

[14] World Bank (2010). *Determinants and Consequences of High Fertility: A Synopsis of the Evidence*. Other Health Studies. Washington D.C.: World Bank

[15] Replacement rate refers to the total fertility rate (average number of children born per woman) at which a population, without migration, exactly replaces itself from one generation to the next. This rate is roughly 2.1 children per woman for most countries; however, this may vary with mortality rates.

[16] C. Kenny and G. Yang (2021). *Can Africa Help Europe Avoid Its Looming Aging Crisis?* Center for Global Development Working Paper 584. Washington D.C.: Center for Global Development; K. Snopkowski, and H. Kaplan (2018). *Demographic Transition*. In The International Encyclopedia of Anthropology, H. Callan (Ed.).

[17] H.M. Yousif (2001). *Fertility Transition: Middle East and North Africa*, in the International Encyclopedia of the Social and Behavioral Sciences N. J. Smelser and P. B. Baltes (Ed.)

[18] United Nations, Department of Economic and Social Affairs (UN DESA), Population Division (2002). *Fertility Levels and Trends in Countries with Intermediate Levels of Fertility.* New York: UN DESA, Population Division; N. Eberstadt and A. Shah (2011). "Fertility Decline in Muslim World: A Veritable Change, still Curiously Unnoticed.", Working Paper Series on Development Policy No. 7. Washington D.C.: The American Enterprise Institute; C. Norville and R. Gomez, and R.L. Brown (2003). "Some Causes of Fertility Rates Movements". *IIPR Insurance and Pension Reports* 03-02.; L. Lugo, A. Cooperman, E. O'Connell and S. Stencel (2011). The Future of the Global Muslim Population, Projections for 2010-2030, Pew Research Center, Forum on Religion and Public Life.

[19] S. C. Watkins (1987). "The Fertility Transition: Europe and the Third World Compared." *Sociological Forum, Special Issue: Demography as an Interdiscipline* Vol. 2, No. 4, pp. 645-673.

[20] F. Willenkens (2014). *Demographic Transitions in Europe and the world*. MPIDR Working Paper WP 2014-004. Rostock, Germany: Max Planck Institute for Demographic Research

world, has also fast-tracked fertility transition.[21]

Channels of demographic dividend

The interplay between changes in a country's population age structure (due to demographic transition) and rapid economic growth originates from two channels: macroeconomic and human development. These manifest themselves through several inter-linked mechanisms, the most important of which are labour supply, savings, and human capital improvements leading to increased productivity.

The most direct impact of demographic change on economy is through the accounting effect of a favourable working age structure. Prior to demographic transition, when countries have high fertility rates and high youth dependency, the ratio of working-age population to dependent population is around 1. When the TFR falls to the replacement level, the ratio rises to 2.5 workers per dependent. Even if output per worker remains constant, the rise in share of working-age population can lead to 43 percent rise in income per capita.[22]

In other words, the accounting effect happens when falling TFR slows population growth rate, leading to an increase in economic output per capita, all other things being equal. Moreover, it increases workforce per capita, primarily through two channels. At the one end, labour supply per capita increases because of more workers per dependent population. At the other end, falling TFR allows higher female labour force participation ceteris paribus, which raises both labour supply, and output per capita.[23]

Given that working-age adults tend to earn more than the very young and the very old, falling TFR and ensuing decrease in dependency lifts savings per capita through both channels: higher output per capita and increased labour supply.

At the micro level, lower dependents contribute to an increase in household savings that provides capital accumulation needed to finance economic growth. At the macro level, public spending otherwise needed to support an increasing population can instead be channeled to productive investments in both physical and human capital, increasing both income and savings. Moreover, longer life spans encourage the large, better-earning cohort with less dependents to increase savings to sustain themselves after retirement age.[24] If these savings are channeled through a well-developed formal financial sector, it potentially enables higher investments leading to productivity gains.

As a country's TFR declines over time, household and individual attitudes about education, family, retirement, the role of women, and work evolve towards greater improvements in human capital. For example, as life expectancy increases, parents are likely to choose to educate their children to more advanced levels. Likewise, higher life expectancy contributes to an increased demand for life-long learning programmes. Similarly, investments in child health and nutrition at both household and national level enable greater cognitive development per year

[21] J. Bongaarts and S. C. Watkins (1996). Social Interactions and Contemporary Fertility Transitions. Population and Development Review, Vol. 22, No. 4, pp. 639-682; S. C. Watkins (1987). "The Fertility Transition: Europe and the Third World Compared." Sociological Forum, Special Issue: Demography as an Interdiscipline Vol. 2, No. 4, pp. 645-673.; Asian Development Bank (2019). Asian Economic Integration Report 2019/2020. *Demographic Change, Productivity, and The Role of Technology*. Manila, Philippines: ADB

[22] D. Canning, R. Sangeeta, and Abdo S. Yazbeck (2015). *Africa's Demographic Transition : Dividend or Disaster?*Africa Development Forum. Washington, DC: World Bank

[23] D. Bloom and J. Williamson (1998). *Demographic Transitions and Economic Miracles in Emerging Asia*, the World Bank Economic Review, Working Paper 77274, Vol. 12. No. 3, pp. 419-455. Washington D.C.: World Bank

[24] A. Mason, R. Lee, J. X. Jiang (2016). "Demographic Dividends, Human Capital, and Saving." *J Econ Ageing* 106-122; R. Lee, A. Mason and T. Miller (2003). "Saving, Wealth and the Transition from Transfers to Individual Responsibility: The Cases of Taiwan and the United States," *Scandinavian Journal of Economics, Wiley Blackwell,* vol. 105(3), pages 339-358.

of schooling than their less healthy counterparts. And as labour force becomes more productive, it promotes higher incomes and savings.[25]

However, as mentioned earlier, a favourable working age structure will not necessarily yield the full potential of demographic dividend; it only results in the accounting effect of demographic dividend. The rest of the dividend is derived from the right kind of policies and investments in population welfare and family planning; in healthcare and education that promote productivity and economic growth; good governance; competitive markets; and macroeconomic channels and factors, such as vibrant external trade, adequate mechanisms for savings and investment, and economic growth sufficient to absorb the growing working age population. It is the successful creation of this enabling environment that helps reap higher demographic dividend potentially accruing from the favourable age structure.[26]

In the context of Pakistan, two key questions emerge from the foregoing discussion. Does Pakistan have a favourable age structure that offers the demographic dividend window of opportunity? And does it have the enabling environment that can help extract the dividend from its youth bulge? This chapter sheds light on these two themes, where the key findings are as follows. Based on different estimates, academic consensus on whether or not Pakistan's period of demographic dividend has begun does not seem to exist. But there is overwhelming evidence that Pakistan needs to decrease TFR substantially if it is to reap the demographic dividend. Second, in order to reap the dividend, large investments need to be made in education and healthcare to ensure that productivity of the country's workforce exceeds or comes at par with competing economies. Lastly, an enabling economic environment is needed to harness the demographic dividend particularly reforms in savings and creating work opportunities for youth and for females.

Whilst recognizing that the factors that help create demographic transition and reap the demographic dividend tend to overlap and interact with each other (**Figure 7.2)**, the rest of the chapter is organized as follows. The next section assesses the state of population structure in Pakistan, and factors thereof. The third section discusses how reproductive/child health and family planning creates the opportunity for demographic dividend, and the state of its affairs in Pakistan. The fourth section talks about the role of education, followed by the section on the contribution of health and nutrition. The sixth section describes the need for enabling economic environment needed to reap the demographic dividend. The last section summarizes key insights for policy deliberations.

7.2 Population Structure in Pakistan

A country's population growth depends on its birth rate, death rate, and net migration (in and out) of a country. Of these, migration does not contribute to the increase in Pakistan's population, as from 1975 to 2021, total net migration from the country stands at 16.5 million people.[27] Population growth, therefore, is driven by a high rate of natural increase, the difference between the number of births and deaths.[28]

While the country's death rate has fallen over the years due to overall advancement in health care science and improvement in living

[25] D. E. Bloom, D. Canning and J. Sevilla (2003). *The Demographic Dividend: A New Perspective on the Economic Consequences of Population Change*. Population Matters, a RAND Program of Policy-Relevant Research Communication. California: RAND Corporation

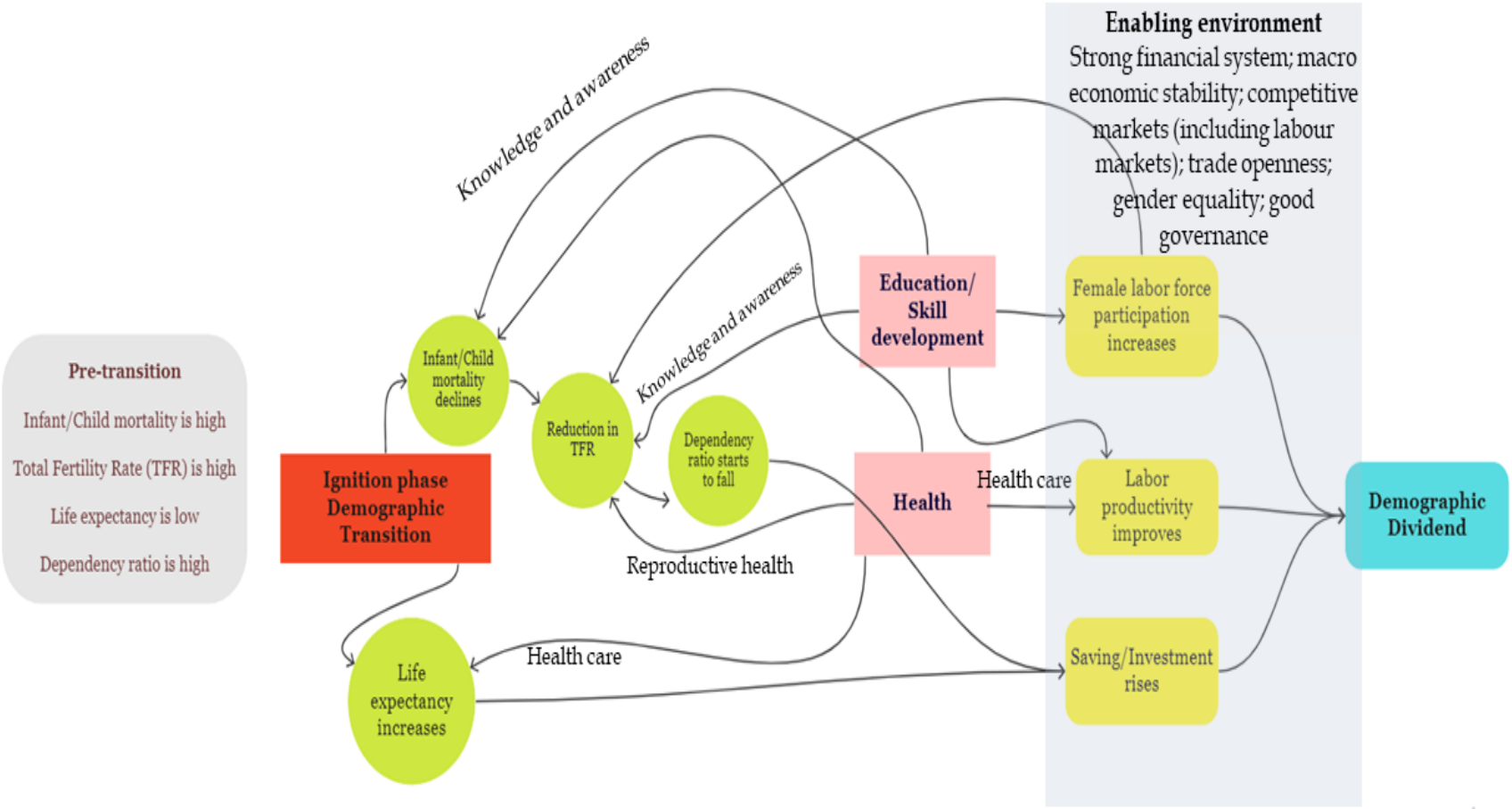
[26] K. Patierno, S. Gaith, and E. L. Madsen (2019). *Which Policies Promote a Demographic Dividend? An Evidence Review*. Population Reference Bureau (PRB) Project PACE: Policy, Advocacy, and Communication Enhanced for Population and Reproductive Health. Washington D.C: PRB

[27] The number is the sum of the annual net migration data from 1975-2021. Source: United Nations Population Division. World Population Prospects 2022.

[28] Death rate are mortalities per 1000 people and birth rate are births per 1000 people. TFR is different from birth rate, as it entails number of births per women.

From Demographic Transition to Demographic Dividend - An Indicative Snapshot of Key Drivers and Enablers

Figure 7.2



Note: Education and health are the primary factors that create and harness the demographic dividend.

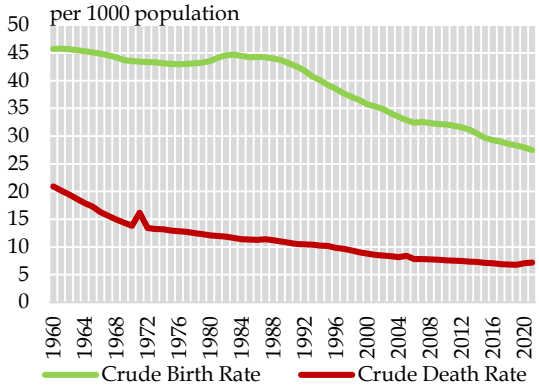
Source: SBP, based on various studies cited in this special chapter particularly (a) D.E. Bloom and J.G. Williamson (1998). Demographic transitions and economic miracles in emerging Asia. World Bank Economic Review, 12, 419–455; (b) J. Crespo Cuaresma, W. Lutz, and W. Sanderson (2014). Is the demographic dividend an education dividend?. Demography, 51(1), 299-315.

standards, the pace of decline in the birth rate has been slower **(Figure 7.3)**.[29] This translates into an increase in the dependent population either in the form of child dependency (between ages of 0-14) or old age dependency (ages greater than 65). Due to this, among the most populous countries, Pakistan's dependent population is the highest after Nigeria **(Figure 7.4)**.

Although Pakistan's dependency ratio has declined from 86.9 percent in 1980 to 70.0 percent in 2021, the pace of decline is slower than the global average and also against Pakistan's peers in South Asia **(Figure 7.5).**[30] The country's pace of decline has also decelerated over the last twenty years. In contrast, the dependency ratio in Bangladesh, which was higher than Pakistan's in 1980, has decreased at a much faster pace, and is now even lower than the global average.

A closer look at Pakistan's age structure reveals that the population has increased across all age groups over the last six decades, with the highest increase in the age-cohorts of 0-14 **(Figure 7.6)**. This means that economic gains stemming from a growing working-age population are constrained by a large number of 0-14 dependents. The burden of high youth dependency is more significant in the poorest quintile, compared to the richest. This implies

Pakistan's Birth Rate and Death Rate **Figure 7.3**



Source: UN Population Division, World Population Prospects 2022.

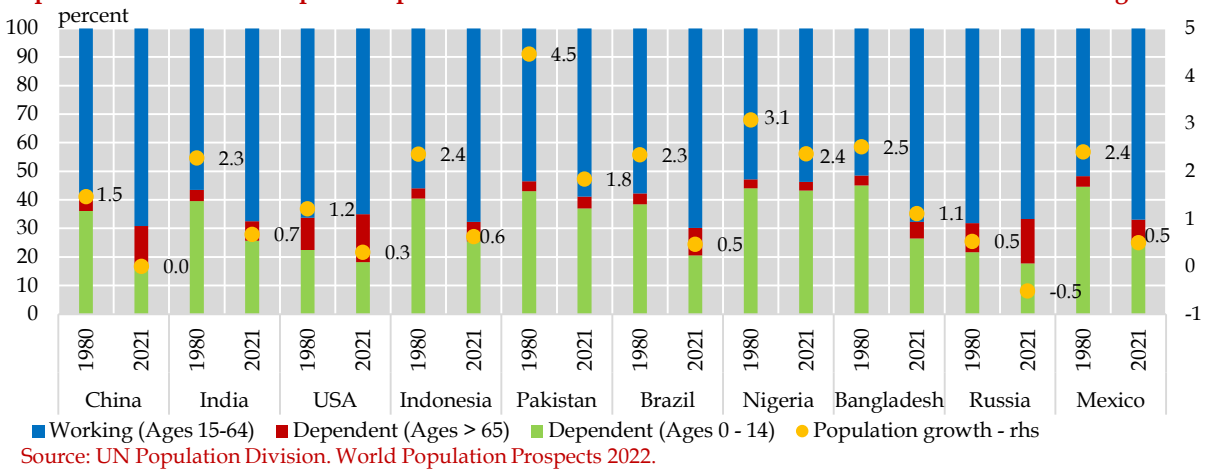
that the rich are more likely to benefit from the favourable working age structure compared to the poor, aggravating income inequalities **(Figure 7.7)**.

Demographic window in Pakistan

There are two main approaches to estimate the demographic window (in number of years) that offers a window of opportunity during which the dividend may accrue to a country.

According to Mason (2005), the window opens when the difference between the growth rate of working age population and total population is positive i.e., the growth rate of working age population outpaces the growth rate of total population as the decline in TFR

Population Structure of Top Ten Populous Countries in 2021 **Figure 7.4**

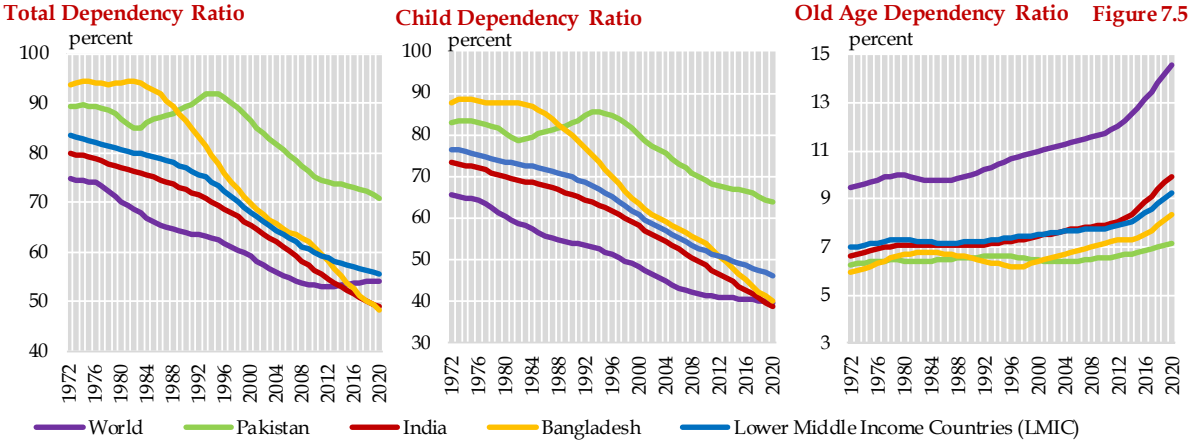


Source: UN Population Division. World Population Prospects 2022.

[29] Z. Sathar, R. Royan and J. Bongaarts (eds.) (2013). *Capturing the Demographic Dividend in Pakistan*. Islamabad: Population Council

[30] The dependency ratio is calculated as the dependent population (ages 0-14 plus 65 and above) over the working age population (ages 15-64).

Total Dependency Ratio **Child Dependency Ratio** **Old Age Dependency Ratio** **Figure 7.5**

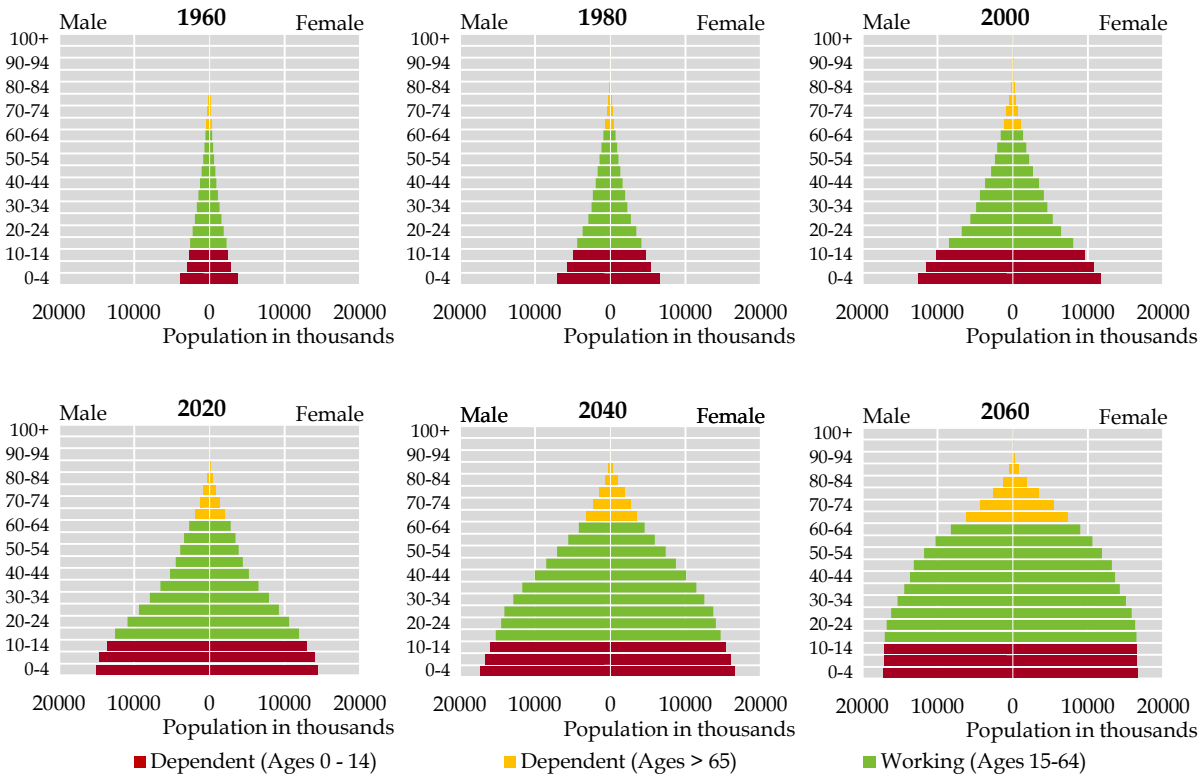


Source: UN Population Division, World Population Prospects 2022.

leads to lesser population in the 0-14 age cohort. [31] Accordingly, the window shuts when the difference between the growth rates of working age population and total population is negative; this phase is typically marked by high old age dependency.

The second approach, adopted by the United Nations Population Division relies on the

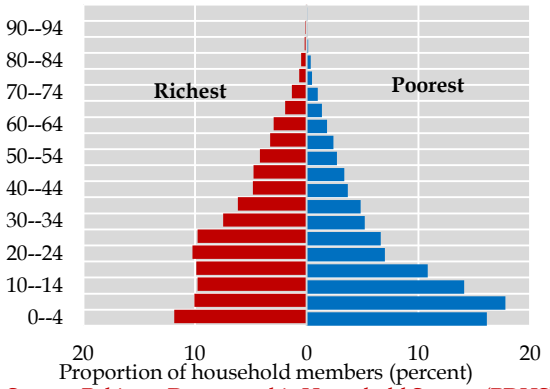
Age Structure in Pakistan **Figure 7.6**



Note: Population for 2040 and 2060 are based on medium variant projections by United Nations.
Source: UN Population Division, World Population Prospects 2022.

[31] A. Mason (2005). "Demographic Transition and Demographic Dividends in Developed and Developing Countries." *United Nations Expert Group Meeting on Social and Economic Implications of Changing Population Age Structure*. Population Division, Department of Economic and Social Affairs United Nations Secretariat. Mexico City.

Population by Wealth Quintiles in Pakistan **Figure 7.7**



Source: Pakistan Demographic Household Survey (PDHS) 2017-18

share of working age population. According to this approach, the demographic window opens when the share of the population between the ages 0-14 years falls below 30 percent, while the proportion of senior citizens (65 years and above) is still less than 15 percent.[32] In 2015, every country that had reached this opportunity-creating favourable age structure had a TFR at or below three children per woman.[33] The window shuts when the decline in share of 0-14 population is offset by the increase in +65 population, rising above 15 percent.

According to Mason's approach, the demographic window in Pakistan opened in the year 1995, and will shut by 2063, as per the UN's baseline medium variant projections of decline in fertility rate **(see Box 7.1).** However, if Pakistan's fertility rate remains constant around the current level, then the window is estimated to be shut by the year 2035 **(Figure 7.8a).**

In contrast, according to the UN's approach, Pakistan's demographic window has not yet opened; it is estimated to open in the year 2042 if the country follows medium variant of TFR decline or in the year 2035 if the TFR drops faster-than-expected at low fertility variant. However, if TFR remains constant around current levels, then demographic window may not open for a foreseeable future **(Figure 7.8b).**

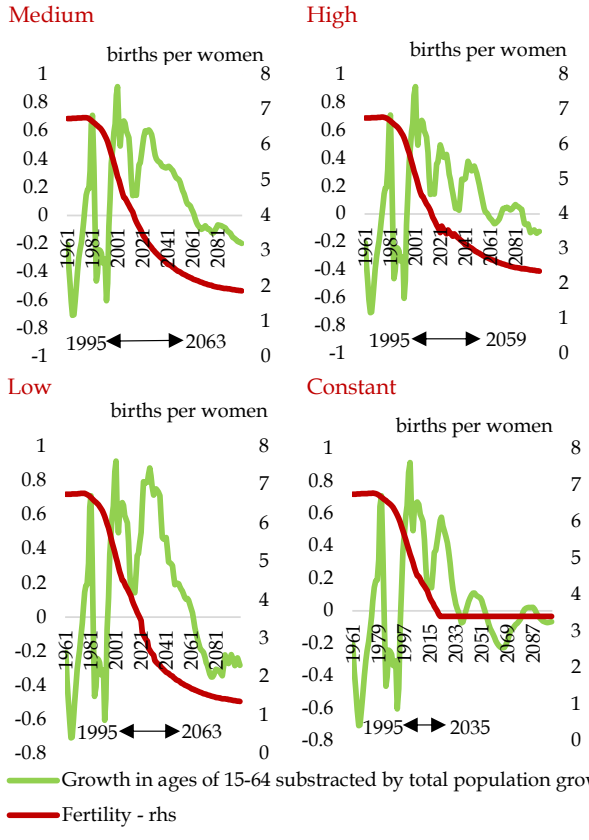
While both Mason's and the UN's approaches to estimate the period of demographic window are followed by demographers, they have a common implication: that Pakistan needs to decrease its TFR at a fast pace.[34]

Box 7.1: Fertility Scenario Projections by United Nations

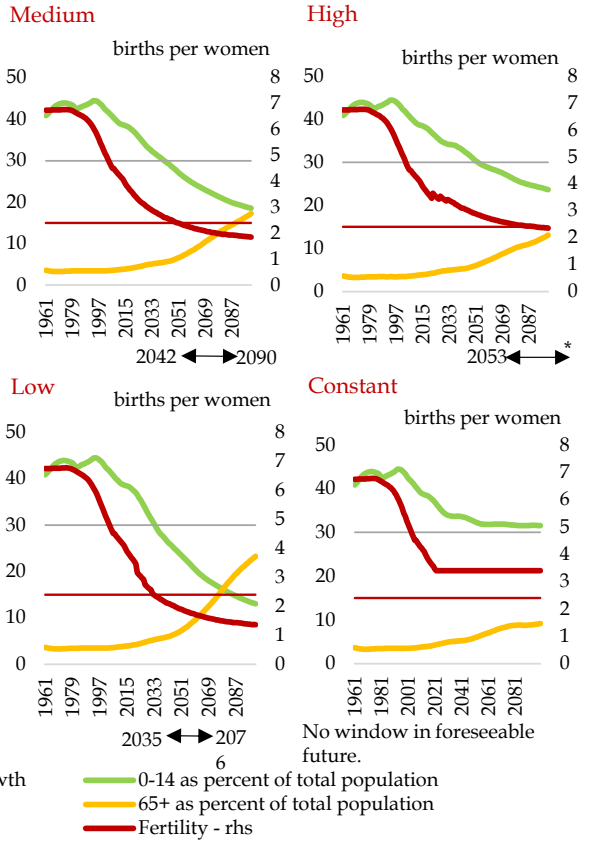
Projections for estimating demographic window are based on different population scenarios reported in World Population Prospects 2022 (official UN population estimates), the baseline of which is called the medium variant. The medium scenario is based on historical trends in fertility, mortality, and other related factors, while also accounting for uncertainty about future changes based on the past experience of other countries under similar conditions. The medium scenario projection corresponds to the median of several thousand distinct trajectories of each demographic component derived using the probabilistic model of the variability in changes over time. This is followed by projections for different fertility scenarios that differ only with respect to the level of fertility, whereas assumptions for all other factors such as gender ratio at birth, mortality and international migration, remain the same. In the high scenario, total fertility is projected to reach a fertility level that is 0.5 births above the total fertility in the medium scenario. In the low scenario, total fertility is projected to remain 0.5 births below the total fertility in the medium scenario. In the constant-fertility scenario, total fertility remains constant at the level estimated for 2022.
Source: United Nations (www.population.un.org/wpp/DefinitionOfProjectionScenarios

[32] United Nations Population Division (2004). *World Population to 2300.* New York: United Nations Department of Economic and Social Affairs, Population Division
[33] United Nations Population Division (2017). *World Population Prospects.* New York: United Nations Department of Economic and Social Affairs, Population Division
[34] For instance, Mason's approach is followed in "D. Nayab (2006). *Demographic Dividend or Demographic Threat in Pakistan*. PIDE Working Papers 2006:10. Islamabad: PIDE" and window calculation by "L. Crombach and J. Smith (2022). "The Demographic Window of Opportunity and Economic Growth at Sub-National Level in 91 Developing Countries." *Social Indicators Research* volume 161, pages 171–189" is built on the UN method.

Demographic Dividend with Different Fertility Variations (Mason Method) **Figure 7.8(a)**



Demographic Dividend with Different Fertility Variations **Figure 7.8(b)**



Note: The arrow represents the window period. All calculations are based on different fertility variations reported by the United Nations.
* In the high fertility scenario, the end of demographic window may extend beyond year 2100; however, population projections by UN beyond 2100 are currently not available.
Source: UN Population Division. World Population Prospects 2022.

7.3 Child Health and Family Planning

Improvements in child health and family planning are two of the most critical factors for successfully attaining the fertility transition needed to achieve demographic dividend and consequently enhancing its effect on economic growth.[35] In addition, investment and improvement in childcare and education facilitates family planning,[36] which is an economic investment. Effective population policies and family planning are major determinants of decrease in birth rates leading to a decline in the TFR,[37] and without the necessary decline in TFR the favourable change in working-age structure for the creation and extension of demographic window, does not ensue.

Reduction in Child and Infant Mortality Rate

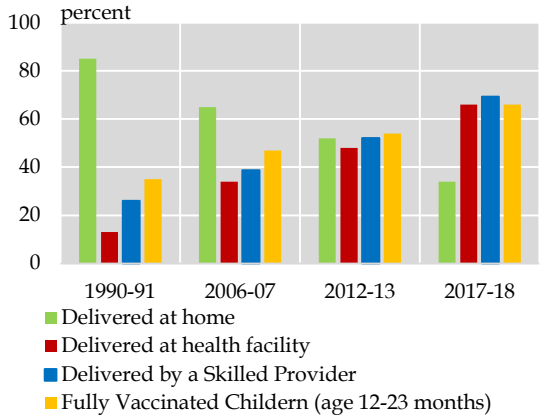
The fertility transition typically starts after the mortality transition i.e. lowering of infant and

[35] D. E. Bloom, D. Canning and J. Sevilla (2003). *The Demographic Dividend: A New Perspective on the Economic Consequences of Population Change*. Population Matters, a RAND Program of Policy-Relevant Research Communication. California: RAND Corporation
[36] Z. Sathar, R. Royan and J. Bongaarts (eds.) (2013). Capturing the Demographic Dividend in Pakistan. Islamabad: Population Council
[37] J. Bongaarts, W. P. Mauldin and J. F. Phillips (1990). "The Demographic Impact of Family Planning Programs." *Studies in Family Planning*, Vol. 21, No.6, pp. 299-310

child mortality rates. In other words, a reduced infant and child mortality rate is one of the key steps that ignite demographic transition.[38] In the beginning of transition, low infant mortality and high fertility rates lead to rapid population growth. However, when the decrease in infant and child mortality rate is sustained, it allows for effective family planning by ensuring a child's survival. This eventually leads to decreased fertility rate because of less number of children required to achieve the desired family size.[39] In turn, this improves maternal health, further improving child health, completing a virtuous cycle.

Since infant and child health is an integral part of the process, investments to improve medical care for infants is a crucial factor in realizing the dividend.[40] In addition, reducing gender parity in education, health and employment can also positively affect infant and child mortality rates, as gender inequality and child mortality are positively correlated.[41]

Status of Children Health in Pakistan **Figure 7.9**



Source: Pakistan Demographic and Health Survey

Pakistan has made considerable progress in the area, as both indicators have consistently declined since 1950. The infant mortality rate has decreased from 108 deaths per 1000 live births in 1990 to 52 deaths in 2021. Similar gains have been made in under-five year mortality rate, with deaths declining from 140 per 1000 live births in 1990 to 63 in 2021.[42]

These improvements are due to overall advancement in maternal and childcare in Pakistan **(Figure 7.9)**. For instance, babies delivered at a health facility have increased from 13 percent to 66 percent of total births between 1991 and 2018. This is important considering that children who are not birthed in a health facility, face a 1.85 times higher likelihood of neonatal mortality rate (death within the first 28 days of a child's life).[43] Another indicator associated with decreased child mortality risk is basic vaccination coverage of children.[44] Pakistan has made progress in this area as well, with more than doubling of vaccine coverage for children of age 12-23 months since 1990.[45]

Although these measures have contributed to a decrease in infant and child mortality rates, especially the initial gains during 1950-1970, the country does not compare favourably

[38] D. E. Bloom, D. Canning and J. Sevilla (2003). *The Demographic Dividend: A New Perspective on the Economic Consequences of Population Change*. Population Matters, a RAND Program of Policy-Relevant Research Communication. California: RAND Corporation

[39] Z. Sathar, R. Royan and J. Bongaarts (eds.) (2013). *Capturing the Demographic Dividend in Pakistan*. Islamabad: Population Council

[40] D. E. Bloom, D. Canning and J. Sevilla (2003). *The Demographic Dividend: A New Perspective on the Economic Consequences of Population Change*. Population Matters, a RAND Program of Policy-Relevant Research Communication. California: RAND Corporation

[41] E.M. Brinda, A. P. Rajkumar, and U. Enemark (2015). "Association between Gender Inequality Index and Child Mortality Rates: A Cross-national Study of 138 Countries. " *BMC Public Health* 15, 97.

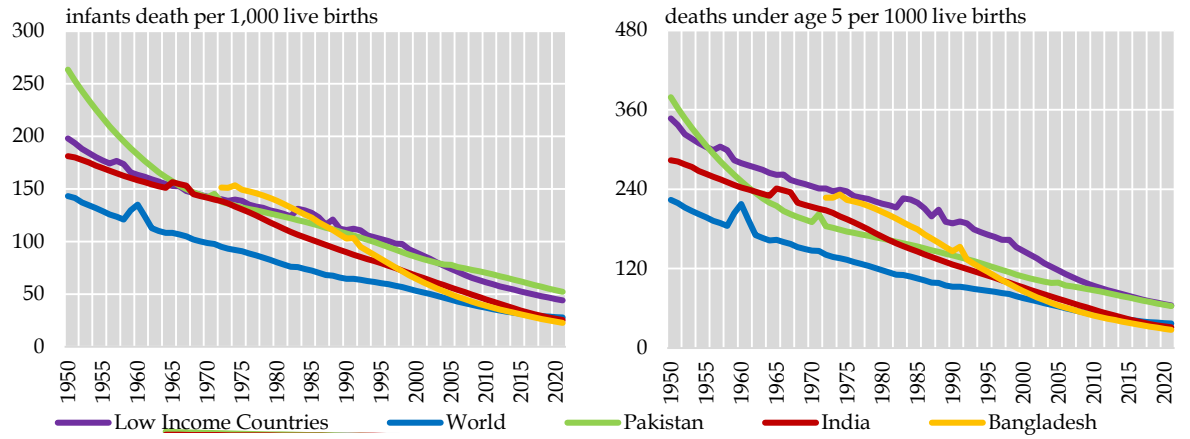
[42] United Nations Population Division. World Population Prospects 2022.

[43] J Ajaari, H. Masanja, R. Weiner, S. A. Abokyi, and S. Owusu-Agyei (2012). "Impact of Place of Delivery on Neonatal Mortality in Rural Tanzania." *International Journal of Maternal and Child Health and AIDS*, 1(1):49-59.

[44] M. E. McGovern and D. Canning (2015). "Vaccination and all-cause child mortality from 1985 to 2011: Global evidence from the Demographic and Health Surveys." *American Journal of Epidemiology Vol.* 182,9 (2015): 791-8.

[45] Basic vaccine for children 12-23 months includes BCG, three doses of DPT-HEPB-HIB, four doses of oral polio vaccine, one dose of inactivated polio vaccine, three doses of pneumococcal vaccine, and one dose of measles. (Source: PDHS 2017-18)

Infant Mortality Rate **Child Mortality Rate** **Figure 7.10**



Source: UN Population Division, World Population Prospects 2022.

relative to regional and global average **(Figure 7.10)**. Pakistan belongs to the group of low-middle income countries; however, its child mortality rate is close to that of low-income countries whereas infant mortality is even higher.[46] The country's progress has also been slow compared to its South Asian neighbors.[47]

One of the reasons for elevated child mortality rate in Pakistan is high-risk fertility behaviors in which children face an increased probability of dying. There are three main high-risk scenarios: age of mother if it's below 18 or above 34 years; children born in less than two years of preceding birth; and the birth order of a child i.e., if a mother has already given birth to 3 or more children before, then successive children will be more prone to mortality risk. Collectively these risks are referred to as avoidable high-risk categories. In Pakistan, the percentage of births in any high-risk category is 56 percent of total births,[48] which is much higher compared to 32.6 percent and 31.3 percent in Bangladesh and India, respectively.[49]

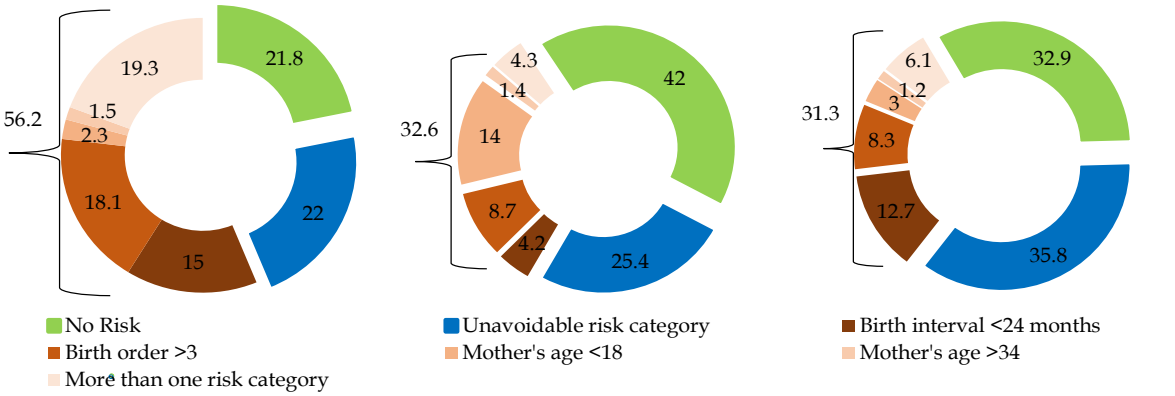
Out of the three sub-categories, 19.3 percent of births in Pakistan were at high mortality risk due to their higher birth order **(Figure 7.11)**, which is mainly because of the preference for large family size in Pakistan. According to Pakistan Demographic and Heath Survey (PDHS) (2017-2018), the number of children ideally desired by men (on average) in Pakistan is 4.3, and by women is 3.9. The second reason after high birth order is birth spacing, as 18.1 percent of children were born within 24 months of their immediate elder sibling. In Pakistan, the child mortality rate for children within 2 years of last birth stands at 122 deaths per 1000 live births, whereas the mortality rate for children born with an interval of more than 4 years since the last birth is 44 per 1000 live births.

Family Planning

The role of family planning is critical to bring about structural changes in the age dynamics required to attain the demographic dividend. In addition to the decline in infant and child mortality rates, family planning is the starting point of demographic transition as investment

[46] All income groups are as per World Bank's definition. (www.datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups accessed on 01st June, 2022)
[47] United Nations Population Division. World Population Prospects 2022.
[48] National Institute of Population Studies (2019). *Pakistan Demographic and Health Survey (2017-18)*. Islamabad: NIPS
[49] National Institute of Population Research and Training (2020). *Demographic and Health Survey (2017-18)*. Dhaka: National Institute of Population Research and Training; International Institute for Population Sciences (2017). *India National Family Health Survey 2015-16*. Mumbai: International Institute for Population Sciences.

High-risk Fertility Behaviour **Figure 7.11**



Source: Pakistan Demographic and Health Survey 2017-18, Bangladesh Demographic and Health Survey 2017-18 and India National Family Health Survey 2015-16.

in reproductive health triggers the changes in the demographic structure. It leads to a decrease in desired family size and empowers couples to plan their family effectively.[50]

Since effective family planning leads to a decline in TFR and allows women to participate in the workforce actively,[51,52] the successful implementation of a family planning program (FPP) is an essential accelerator of the fertility transition.[53] One aspect of the FPP is to increase awareness and education about reproductive health. This, for instance, includes interventions targeted at achieving a delay in the first birth, which can help improve infant health.[54]

Another aspect of the FPP includes increasing the use of contraceptives. Governments in many East Asian economies that harnessed the demographic dividend promoted the use of contraceptives to tackle a slow decline in TFR. These countries successfully executed the plans mainly because of a clear emphasis on family planning, funding from the government for FPPs, the public sector's willingness to engage with organisations in the private sector, and no active opposition from civil society **(Box 7.2)**.[55]

Box 7.2: Successful Family Planning Programs

Iran

The country's first FPP was launched in 1967; however, it became dysfunctional after 1979. Due to the high economic cost of rapid population growth, Iran reintroduced FPP in 1989. In 1989, Iran's fertility rate was 5 births per woman, which dropped to 2.1 by the year 1999.[a] The country categorized its FPP into three main goals: delaying first pregnancy, discouraging births for women under 18 or more than 35 years old, and limiting the family size to three children. It gave full authority and resources to the ministry of health and medical

[50] T. H. Tulchinsky and E. A. Varavikova (2014). "Family Health" in T.H. Tulchinsky and E.A. Varavikova (eds), The New Public Health (Third Edition).
[51] Ibid
[52] K. Patierno, S. Gaith, and E. L. Madsen (2019). *Which Policies Promote a Demographic Dividend? An Evidence Review*. Washington D.C.: Population Reference Bureau
[53] J. DaVanzo, D. M. Adamson (1998). *Family Planning in Developing Countries: An Unfinished Success Story*. Issue Paper, Document No. IP-176. California: Rand Corporation
[54] J. N. Gribble and J. Bremner (2012). *Achieving A Demographic Dividend*. Population Bulletin Vol. 67, No. 2. Washington D.C.: Population Reference Bureau.
[55] A. Mason (2003). "Population Change and Economic Development: What Have we Learned from the East Asia Experience?" *Applied Population and Policy* 2003:1(1) 3–14

education to lead the FPP and ensure free reproductive service to everyone. To discourage more than three children, allowances given to large families were discontinued, and any government benefits were limited to the first three children.
Iran also used "health houses" present in rural areas. Since these were staffed by locals, it made communication and the spread of information easier. One additional function of people working in the health houses was to compile population data every year and gather information on TFR and the use of contraceptives at the local level. Education and awareness also remained one of important features of Iran's FPP. For instance, all university graduates must take a two-credit hour course on family and population planning. Similarly, family planning education is also a part of the country's curriculum for adult literacy programs. The requirement to complete a family planning course before the couples can receive their marriage license was also started.[b]

Bangladesh

Bangladesh had family planning activities at the time of its creation, which it continued by shifting decision-making from the Family Planning Board and the Council to the Ministry of Health and Family Planning in 1972.[c] The country has successfully executed its family planning policy, leading to a decline in its fertility rate from 6.8 births per woman in 1972 to 2 births per woman in 2021 **(Figure 7.2.1)**.[d] Bangladesh has achieved this "reproductive revolution" despite the challenges of illiteracy and the prevalence of trends like early marriage and son preference. The success is due to a carefully designed FPP that acknowledged the inequalities and social norms. It employed women to educate and deliver contraceptives to females in their homes. This strategy has also increased the contraceptive prevalence in rural areas of Bangladesh.[e]

Indonesia

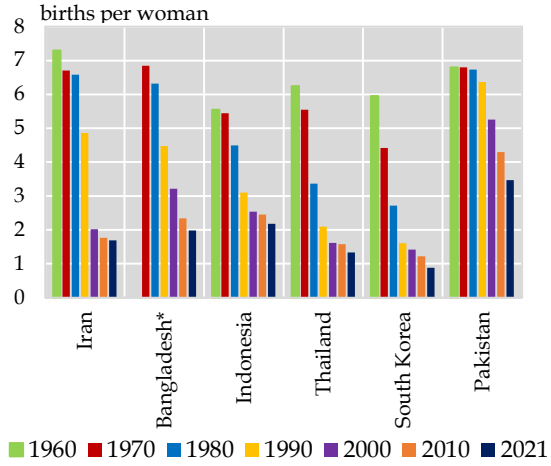
At the onset of the family planning program in 1970, the majority of Indonesians were financially constrained, and the literacy rate was also low. However, despite these challenges, the country successfully implemented the FPP program without active opposition from religious groups and other sections of civil society. Indonesia's FPP now serves as a role model for developing countries. A separate institute, Indonesia National Family Planning Coordination Board, was formed in 1970, which reported directly to the president and remained responsible for FPP implementation. The country's contraceptive prevalence rate was 8.6 percent in 1973, which increased to 50 percent in 1991.[f] Resultantly, its fertility rate declined from 5.4 births in 1970 to 3.1 births in 1991.[g]

The country's FPP focused on areas with high population density and moved towards low-density regions. In villages, it executed the family planning with the help of volunteers, leading to strong community support and awareness and reducing apprehensions. The services were mainly free and provided by the government in the villages. In contrast, family planning was a charged service in urban centres, and the government engaged the private sector to deliver it. The program followed a clear set of quantitative targets, for instance, halving of birth rate between 1970-2030, and used mass media with creative slogans to market family planning.[h,i]

Thailand

After a pilot project, Thailand officially adopted its National Family Planning Program (NFPP) in 1970. The country successfully increased the contraceptive prevalence rate from 14.8 percent in 1970 to 53.4 percent in 1978.[j] This led to a fertility decline from 5.6 births per woman in 1970 to 3.7 births in 1978. By 1990, the country had reached the replacement fertility rate of 2.1 births. Multiple factors made Thailand's FPP a success. The Ministry of Public Health in Thailand performed the function of the central organisation in implementing the NFPP. The program closely engaged the private sector, with the private sector actively motivating people to use family planning services. Multiple NGOs complimented the government's efforts by educating people and promoting contraceptives with the support of volunteers from teaching, farming and shop keeping community. This support from civil society organisations contributed to the country achieving its family planning targets.[k]

Decade-wise TFR Trend **Figure 7.2.1**



* Data for Bangladesh starts from 1972
Source: United Nations Population Division. World Population Prospects 2022

South Korea

South Korea decreased its fertility rate from 6.1 births per woman in 1960 to 0.8 births in 2020 by prioritizing FPP. Contraceptive prevalence in the country increased from 16 percent in 1965 to 82.3 percent in 2018. It promoted reproductive education through health centres but made major headways with door-to-door visits by health care workers.[l] The country also actively engaged players from non-government sectors.

References

[a] Source: United Nations Population Division. World Population Prospects 2022.
[b] F. R. Fahimi (2002). *Iran's Family Planning Program: Responding to a Nation's Needs*. MENA Policy Brief No.2. Washington D.C.: Population Reference Bureau
[c] Source: Directorate General of Family Planning, Health Education and Family Welfare Division, Ministry of Health and Family Welfare (www.dgfp.gov.bd/site/page/ca81e7a3-33dd-442b-90bc-da21a34a0c13/-, accessed on September 09, 2022)
[d] D. E. Bloom, D. Canning and J. Sevilla (2003). *The Demographic Dividend: A New Perspective on the Economic Consequences of Population Change*. Population Matters, a RAND Program of Policy-Relevant Research Communication. California: RAND Corporation
[e] S. R. Schuler, S. M. Hashemi, and A. H. Jenkins (1995). "Bangladesh's Family Planning Success Story: A Gender Perspective." *International Family Planning Perspectives*, 21:132–137 & 166.
[f] Source: World Bank
[g] Source: United Nations Population Division. World Population Prospects 2022.
[h] L. B. Curtin, C. N. Jhonson, A. B. Kantner, and A. Panilaya (1992). *Indonesia's National Family Planning Program: Ingredients of Success*. Population Technical Assistance Project Occasional Paper do. 6. Washington D.C.: USAID.
[i] D. P. Warwick (1986). "The Indonesian Family Planning Program: Government Influence and Client Choice." *Population and Development Review,* Vol. 12, No. 3, pp. 453-490.
[j] Source: World Bank
[k] H. J. Rutz (1989). "Adoption and Diffusion Theories used in Thailand's Family Planning Program." *Retrospective Theses and Dissertations*, 17305.
[l] J. N. Gribble and J. Bremner (2012). *Achieving A Demographic Dividend*. Population Bulletin Vol. 67, No. 2. Washington D.C.: Population Reference Bureau.

In Pakistan, the fertility rate remained high between 1950 to 1979 at around 6.8 births per woman. This is despite Pakistan being one of the first Asian countries to have family planning activities.[56] The family planning initiative was first taken by an NGO, the Family Planning Association of Pakistan, in 1953. Under the first 5-year plan, the government supported family planning by issuing small grants to volunteers working in the private sector.[57]

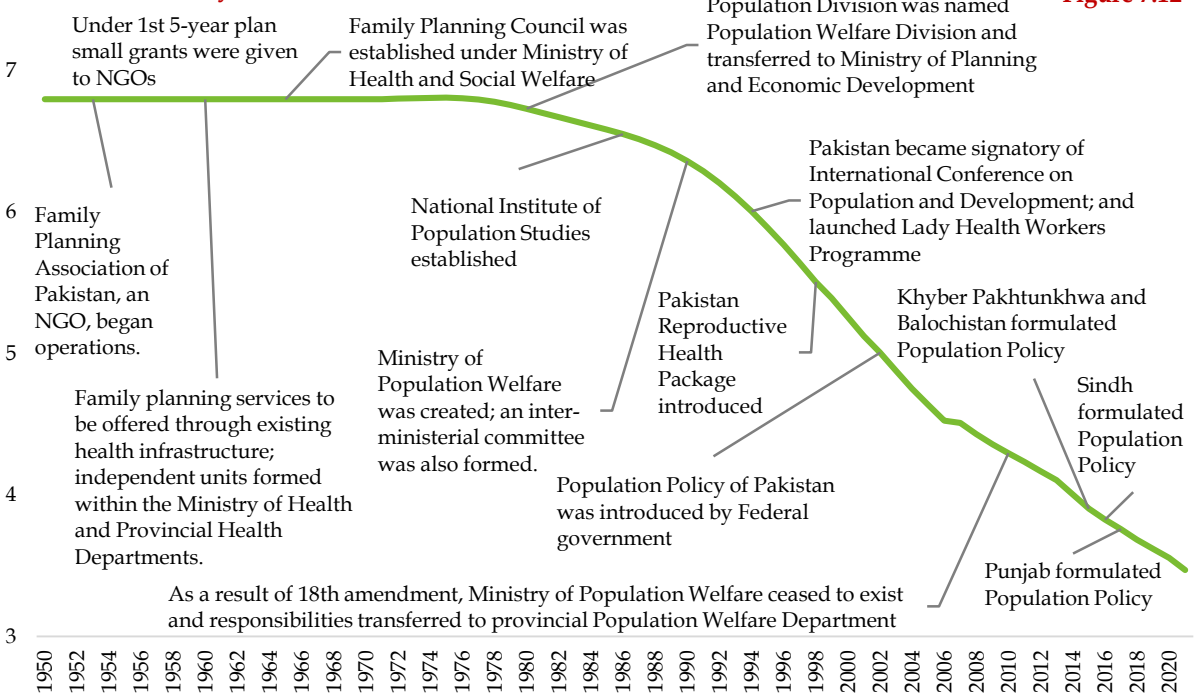
During the 1960-65, under the second five-year plan, a mechanism for implementing family planning was envisioned. The plan included the formation of clinics under the then existing health infrastructure in the country. It laid emphasis on the training of health professionals and education of the masses by using media platforms and engaging NGOs.

The third plan provided formal institutions focusing on the subject in the form of Family Planning Council at the federal level and Family Planning Boards at the provincial level **(Figure 7.12)**.[58]

Although these efforts provided initial infrastructure and mainstreamed some channels through which an FPP can be implemented, they did not bring any visible changes in fertility rates. In the decade following the third plan, the government took no significant initiatives to further family planning in the country.[59] This is also reflected in the contraceptive prevalence rate, which, between 1975 to 1980, dropped from 5.4 to 3.3, the lowest ever in the country's recorded history **(Figure 7.13)**

[56] J. B. Casterline, Z. A. Sathar, and M. Haque (2001). "Obstacles to Contraceptive Use in Pakistan: A Study in Punjab." *Studies in Family Planning* 32[2]: 95–110.
[57] W. C. Robinson (1966). "Family Planning in Pakistan's Third Five Year Plan." *The Pakistan Development Review* Vol. 6, No. 2 (SUMMER 1966), pp. 255-281
[58] Ibid
[59] Source: Population Welfare Department, Government of Punjab available at www.pwd.punjab.gov.pk/history, accessed on 06 June, 2022.

Institutional History and TFR in Pakistan **Figure 7.12**

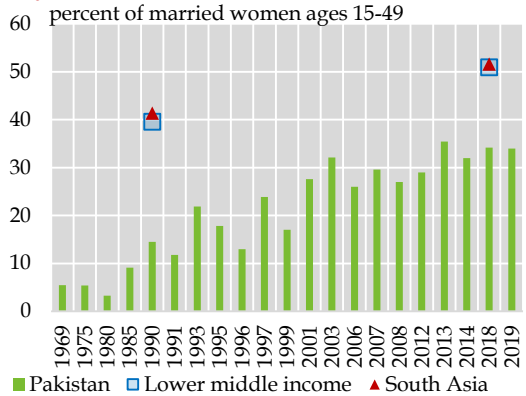


Source: UN Population Division. World Population Prospects 2022; Population Welfare Department, of Punjab, Sindh, Khyber Pakhtunkhwa and Balochistan; W. C. Robinson (1966). "Family Planning in Pakistan's Third Five Year Plan." *The Pakistan Development Review* Vol. 6, No. 2, pp. 255-281; N. Mahmood and D. Nayab and A. Hakim (2000). "An Analysis of Reproductive Health Issues in Pakistan." The *Pakistan Development Review,* Vol. 39, No. 4, pp. 675-693

In 1990, the Ministry of Population Welfare was formed. In 1994, Pakistan also became a signatory of the International Conference on Population and Development and later introduced Reproductive Health Package, focusing on family planning as well as maternal and infant health.[60]

These initiatives are a few reasons for a visible increase in contraceptive prevalence from 11.8 percent in 1991 to 32.1 percent in 2003 and a rapid decline in the fertility rate during the same period. Another factor that accelerated the pace of fertility decline during the 1990s was the hiring of Lady Health Workers (LHW). The LHW provided the awareness and family planning services at community level.[61] In 2002, Pakistan issued its Population Policy, which aimed at achieving a TFR of 2.1 by 2015.[62] However, the policy did not achieve its targets, as the TFR declined to 3.5 by 2021 from 5 in 2002.[63]

Pakistan's Contraceptive Prevalence (any method) **Figure 7.13**



Source: World Bank

[60] N. Mahmood and D. Nayab and A. Hakim (2000). "An Analysis of Reproductive Health Issues in Pakistan." The *Pakistan Development Review,* Vol. 39, No. 4, pp. 675-693

[61] A. Hafeez, B. K. Mohamud, M. R. Shiekh, S. A. I. Shah, and R. Jooma Lady Health Workers Programme in Pakistan: Challenges, Achievements and the Way Forward. *J Pak Med Assoc*. 61(3):210-5.

[62] Ministry of Planning Development and Reform (2013-18). Chapter 4: Population, in 11th Five Year Plan 2013-18. Islamabad: Planning Commission, Ministry of Planning Development and Reform

[63] United Nations Population Division. World Population Prospects 2022.

Provincial Population Policy **Figure 7.14**

	KP 2015		Balochistan 2015		Sindh 2016		Punjab 2017	
	Target	Target Year	Target	Target Year	Target	Target Year	Target	Target Year
Fertility Rate	2.1	2032	2.1	2040	2.1	2035	2.1	2030
	3.3	2020	4	2020	3	2020	3.3	2020
Universal Reproductive Health & Family Planning	-	2020	-	2020	-	2020	-	2025
Contraceptive Prevalence Rate	42	2020	25	2020	45	2020	60	2030

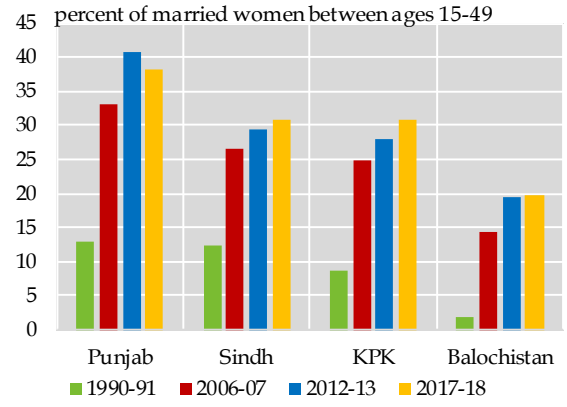
Source: Population Welfare Department of Khyber Pakhtunkhwa (KP), Balochistan, Sindh and Punjab.

Under the 18th amendment, population planning became a provincial subject, which led to the dissolution of the Ministry of Population Welfare and the transfer of responsibility to the provincial Population Welfare Departments. The provinces of Khyber Pakhtunkhwa (KP), Sindh, and Punjab have announced their population policies with the revised targets **(Figure 7.14).** Punjab's TFR, despite being higher than its target, is the lowest among the four provinces, reflecting highest use of contraception. **(Figure 7.15a and b)**.

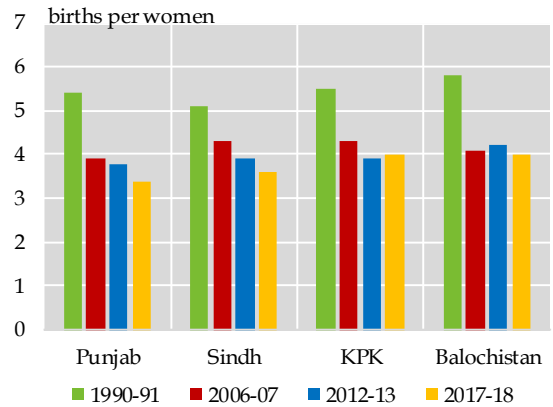
From the perspective of wealth quintiles, the TFR declines with increasing level of income **(Figure 7.16)**. The lowest and highest quintile difference is 2.1 births per woman; the same difference is 0.6 and 1.7 for Bangladesh and India respectively. This shows a stark fertility variation between the poorest and the richest in the country. Further, the fertility rate for even the highest income quintile of Pakistan is higher than the first (poorest) and second income quintiles of Bangladesh and India, respectively. The country's overall fertility rate is also the highest among the top ten populous countries in the world, except for Nigeria **(Figure 7.17)**.

Moreover, wanted fertility in Pakistan is also high.[64] Pakistan's wanted fertility rate was 2.9 births per woman in 2017-18. In comparison, Bangladesh's rate was 1.7 in 2017-18, and India's rate was 1.8 in 2016-17. High wanted fertility shows a preference for large family

Province-wise Contraception Use **Figure 7.15a**



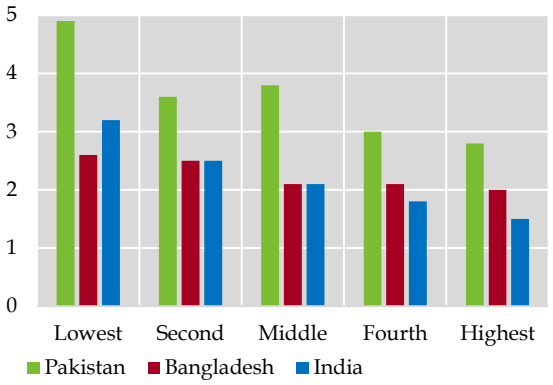
Province-wise Fertility Rate **Figure 7.15b**



Note: For 1990-91 and 2006-07 Punjab includes data for Islamabad as well.
Source: Pakistan Demographic and Household Survey (PDHS)

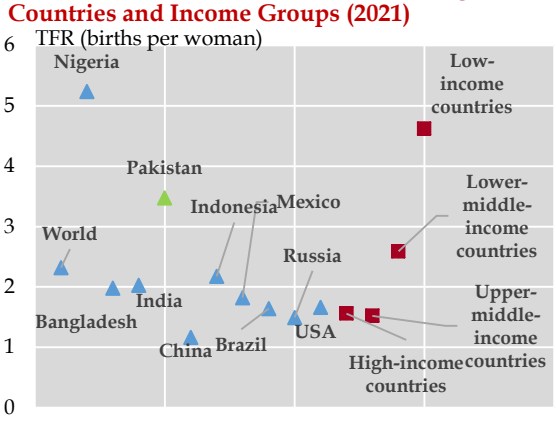
[64] Wanted births refers to any birth fewer than or equal to the number of children a woman reports as her ideal number. Wanted fertility rate refers to the average number of children a woman would have by the end of her childbearing years at current fertility rates, excluding unwanted births (any birth in excess of the number of children a woman reported as her ideal number). Source: PDHS 2017-18 (For technical definition see PDHS 2017-18, available at www.dhsprogram.com/pubs/pdf/FR354/FR354.pdf)

Wealth Quintile-wise Fertility Rates **Figure 7.16**



Note: Data for Pakistan and Bangladesh is for 2017-18 and for India 2015-16.
Source: Pakistan DHS, Bangladesh DHS and National Family Health Survey, India

TFR across Top Ten Populous Countries and Income Groups (2021) **Figure 7.17**



Note: Income groups are as per World Bank definition.
Source: UN Population Division. World Population Prospects 2022.

sizes. It is worth pointing out that wanted fertility rate and total fertility rate decrease with increasing level of education. As per (PDHS 2017-18), wanted fertility is 3.5 for parents with no education as against 2.25 for parents with higher education.

7.4 Role of Education

Education has a significant role to play in both driving the demographic transition towards a demographic window and harnessing that window into a demographic dividend. In the former context, education helps lower the TFR. In the latter context, education contributes to an increase in labour force participation, labour productivity, use of technology, and innovation.[65]

Creating the desired age structure

Education, particularly female education, helps bring about the desired age structure by lowering the TFR through two channels: (a) by reducing infant and child mortality, which, as discussed earlier, ignites fertility transition; and (b) by informed family planning decisions.

In the case of former, educated mothers are better informed about specific diseases; they can identify early signs of illness and seek immediate medical advice; and thus, reduce child mortality. Simple measures like ensuring clean water and malaria nets can mitigate the risks from preventable life-threatening diseases, such as malaria and diarrhea. Pneumonia, the deadliest cause of child mortality, is estimated to be curtailed by 14 percent if women had just one additional year of education. Similarly, diarrhea, is expected to drop by 8 percent if all mothers are literate up to primary level education; this can further be reduced by 30 percent if they completed secondary education.[66] Moreover, reducing differences in education provided to women and men by 10 percent can lead to 59.5 fewer maternal deaths per 1000 live births and can increase the life expectancy of females and males by 2.1 and 1 year, respectively.[67] Education also lowers the preference to have a son, which is one of the factors behind higher

[65] N. G. Mankiw, D. Romer, and D. W. Weil (1992). "A Contribution to the Empirics of Economic Growth." *Quarterly Journal of Economics*, 107, 407–437.; J. Benhabib and M.Spiegel (2005). "Human Capital and Technology Diffusion." In P. Aghion and S. Durlauf (Eds.), *Handbook of Economic Growth* Vol. 1, pp. 935–966. Amsterdam, The Netherlands: Elsevier.
[66] UNESCO (2013). *Education Transforms Lives*. ED.2013/WS/25. Paris: UNESCO
[67] J. Heymann (2020). Gender parity at scale: "Examining correlations of country-level female participation in education and work with measures of men's and women's survival." *eClinicalMedicine,* Vol. 20.

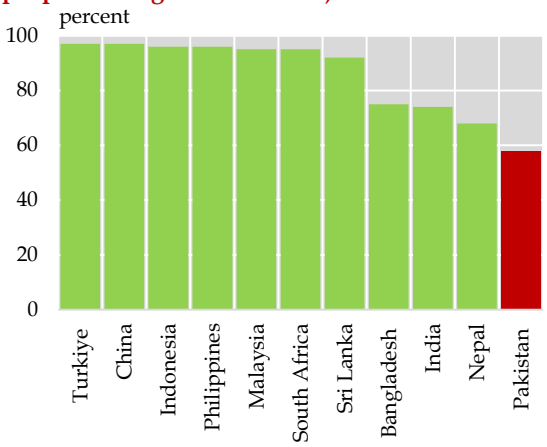
TFR in many developing countries.[68]

In the case of latter, educated couples have a better understanding of family planning, as well as higher use of contraception. Moreover, educated females are relatively more autonomous in taking reproductive decisions.[69] Evidence from sub-Saharan Africa shows 2.6 births among women with higher education, compared to 4.2 births among women without education.[70] Moreover, the number of children born is noticeably lower when women are educated beyond the primary level.[71] For instance, secondary education of mothers is found to be an important driver for reducing the fertility rate and child malnutrition in Bangladesh.[72] Similarly, a study based on a tribe in the Indian state of Assam finds that women's education and fertility have positive relation up to 5.3 years of education level. After this tipping point, education and fertility are negatively correlated. The TFR reaches a replacement rate when graduate-level education is achieved.[73]

In addition to lowering fertility rates through aforementioned channels, educational attainment also lowers the TFR through the channel of labour force participation, particularly female participation in the labour market.[74] Women who are part of the workforce tend to have fewer children keeping in view the management of work, resources, and childbearing as well as the need to investment in child's health and education.[75] In turn, with lower fertility rates more females are motivated to join the work force that spurs economic growth.[76]

In Pakistan's context, there is a need to improve basic education at primary and secondary levels for the country to be able to create the desired age structure for demographic window. Adult literacy rate in Pakistan is low compared to other peer economies **(Figure 7.18)** where literacy[77] rate for females is 46 percent out of the adult female population (aged 15 years plus) against

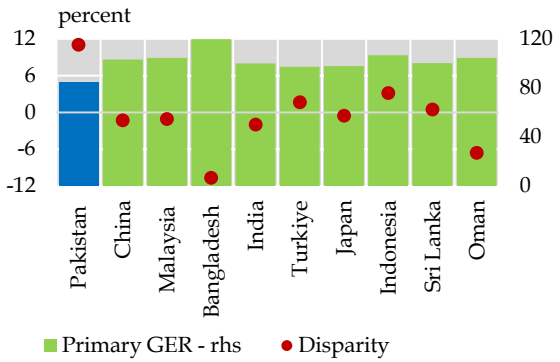
Adult Literacy Rate* (percent of people with age 15 and above) **Figure 7.18**



* Latest values ranging between year 2018 and 2020
Source: World Bank

[68] N. Tavassoli (2021). "The Transition of Son Preference: Evidence from Southeast Asian Countries." *Economics*, Vol.9, no.1, 2021, pp.43-67.
[69] J. Bongaarts, (2010). "The causes of educational differences in fertility in Sub-Saharan Africa." *Vienna Yearbook of Population Research*, 31-50.
[70] H. Groth, J. F. May, and V. Turbat (2019). "Policies needed to capture a demographic dividend in Sub-Saharan Africa." *Canadian Studies in Population*, 46(1), 61-72.
[71] D. Canning, R. Sangeeta, and Abdo S. Yazbeck (2015). *Africa's Demographic Transition : Dividend or Disaster?* Africa Development Forum. Washington, DC: World Bank
[72] S. El-Saharty, S. Chowdhury, N. Ohno, and I. Sarker(2016). *Improving Maternal and Reproductive Health in South Asia: Drivers and Enablers.* World Bank Studies. Washington D.C.: World Bank
[73] ibid
[74] W. G. Bowen, and T. A. Finegan (1966). "Educational attainment and labor force participation." *The American Economic Review*, 56(1/2), 567-582.
[75] O. Galor and D. N. Weil (1999). "From Malthusian stagnation to modern growth." *The American Economic Review*, 89(2), 150–154.
[76] D. E. Bloom, D. Canning, G. Fink, and J. E. Finlay (2009). "Fertility, Female Labor Force Participation, and the Demographic Dividend." *Journal of Economic Growth*, 14(2), 79-101.
[77] According to PBS, literate is defined as the person who can read and write in any language.

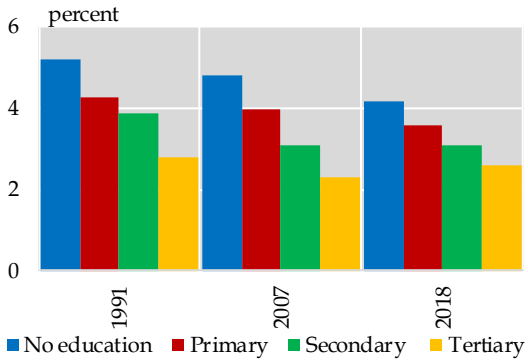
Gender Disparity in Gross Enrollment Ratio (GER) of Male and Female Students at Primary Level **Figure 7.19**



*Note: Differnece is calculated as Male value minus Female values. Positive value means female GER < Male GER. Latest values ranging between year 2018 and 2020

Source: World Bank and Pakistan Social And Living Standards Measurement

Total Fertility Rate by Educational Attainment in Pakistan **Figure 7.20a**



Excludes Azad Jammu and Kashmir and Gilgit Baltistan

Source: Population Council and PDHS 2017-18

68 percent in the case of male population.[78]

While the gender differences in education especially at the primary level are narrowing down globally,[79] the differences between male and female students in the gross enrollment ratio (GER)[80] at the primary level remained highest in Pakistan in comparison to other regional economies **(Figure 7.19)**. Around 27 percent of female children at primary school age are not going to school as compared to 19 percent male children.[81]

Moreover, there are large gaps in educational attainment across rich and poor. The poorest segment of the country accounts for around 51 percent of the children of primary school age who are out of school against 4 percent of the richest group.[82] About 75 percent of the poorest youth of upper secondary school age is not in school; whereas, under the richest group, 14 percent of the youth of upper secondary school age is out of school.[83]

Considering that education, particularly female education, leads to lower TFR, such a high degree of children with no and little education has two implications. First, it implies that unless significant investments are made in education the TFR will decline slowly in Pakistan **(Figure 7.20a)**. Second, it implies that income and wealth inequality is at risk of perpetuating since the affluent and educated have less TFR and thus benefit from favourable age structure compared to the poor **(Figure 7.20b).**

Harnessing the Demographic Dividend

In macroeconomic theory, education is one of the most important determinants of economic growth,[84] mainly through the channel of labour productivity, which contributes to growth in incomes.[85] Accordingly, a large part

[78] Pakistan Bureau of Statistics (2020). *Pakistan Social and Living Standards Measurement.* Islamabad: PBS

[79] World Economic Forum (2021). *Global Gender Gap Report*. Switzerland: WEF

[80] Total enrolment in a specific level of education, regardless of age, expressed as a percentage of the population in the official age group corresponding to this level of education.

[81] United Nations Educational, Scientific and Cultural Organization. *World Inequality Database on Education.* Paris: UNESCO

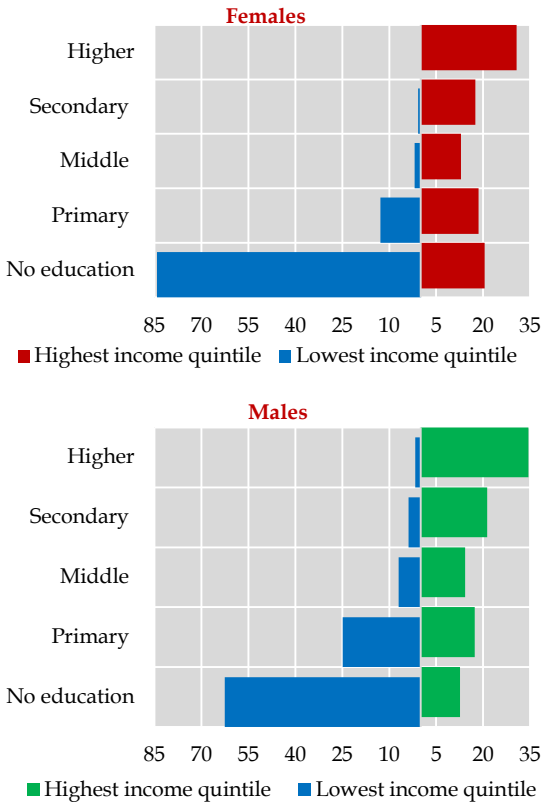
[82] United Nations Educational, Scientific and Cultural Organization. *World Inequality Database on Education.* Paris: UNESCO

[83] ibid.

[84] E. A. Hanushek, E. A. and L. Woessmann (2010). "Education and economic growth." *Economics of Education,* 60, p.67.

[85] G. H. Sahlgren (2014). *Incentive to Invest: How Education Affects Economic Growth*. London: Adam Smith Institute, 1, 2016.

Precentage of Population by Level of Education in Pakistan **Figure 7.20b**



Source: Pakistan Demographic and Health Survey 2017-18

of the demographic dividend is in essence an education dividend.[86]

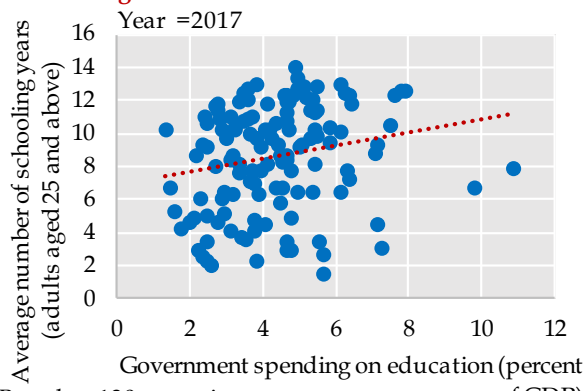
Cross country evidence suggests that primary and secondary education accelerates the trajectory of economic growth.[87] During their demographic transition of 1965-1980, East Asian economies, consistently made significant public investments in primary and secondary education to serve large segments of the population that otherwise would have been deprived of access to education.[88] In addition to sharp improvements in primary and secondary enrollment rates through the achievement of universal primary education,[89] the East Asian economies also invested in the quality of education enabling their students to consistently outperform standardized international exams.[90] Furthermore, educational policies that focused on basic education (at primary and secondary levels) also lead to improvements in labour force skills of these economies.[91]

Unlike East Asian economies, the demographic transition proved to be a bane in the Middle East and North Africa, and Sub-Saharan Africa where governments did not prioritize spending on education. As a result, the regions faced low levels of primary education and secondary enrollment, and high levels of youth unemployment.[92] This exposed the young population to lifelong economic vulnerability and inter-generational poverty.[93] Indeed, increased government spending is strongly related to higher enrollment rates **(Figure 7.21a)**, and the average number of years of formal education **(Figure 7.21b)**

While basic education (primary and secondary) is a necessary condition to begin

[86] J. Crespo Cuaresma, W. Lutz, and W. Sanderson (2014). "Is the Demographic Dividend an Education Dividend?" *Demography*, 51(1), 299-315.
[87] R. J. Barro (1997). *Determinants of Economic Growth: A Cross-country Empirical Study.* Development Discussion Paper No. 579. Harvard Institute for International Development. Massachusetts: Harvard University.
[88] World Bank (1993). *The East Asian Miracle. Economic Growth and Public Policy.* World Bank Policy Research Report. Washington D.C.: World Bank.
[89] J. Page (1994). *The East Asian Miracle: Four Lessons for Development Policy.* NBER Macroeconomics Annual, 9, 219-269. Massachusetts: MIT Press
[90] M. O. Martin, Ina V. S. Mullis, E. J. Gonzalez, S. J. Chrostowski. 2004a. *TIMSS 2003 International Mathematics Report: Findings from IEA's Trends in Mathematics and Science Study at the Fourth and Eighth Grades.* Boston: International Association for the Evaluation of Education Achievement (IEA).
[91] World Bank (1993). *The East Asian Miracle. Economic Growth and Public Policy*. World Bank Policy Research Report. Washington D.C.: World Bank.
[92] L. Vilhuber (2006). *The Transition from School to the Labor Market in Uganda.* Preliminary Outline presented at the World Bank Youth in Africa's Labor Market Workshop. Washington, DC: The World Bank.
[93] H. Oosterbeek and H. A. Patrinos (2008). *Financing Lifelong Learning*. Policy Research Working Paper, 4569. Washington, DC: The World Bank.

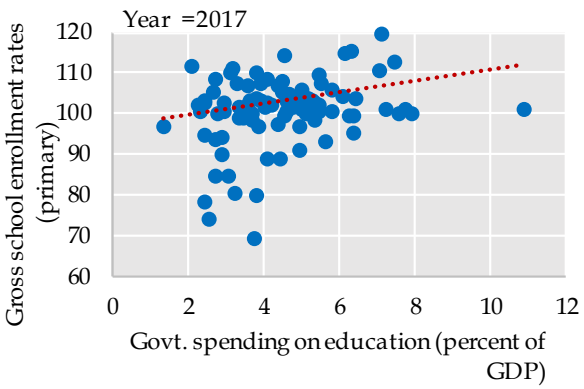
Correlation between Government Spending and Average Years of Schooling **Figure 7.21a**



Based on 130 countries

Source: World Bank

Correlation between Government Spending and Gross Enrollment Rates at the Primary Level **Figure 7.21b**



reaping demographic dividend, it isn't a sufficient condition to exploit the full potential of demographic dividend, since labour has to be gainfully employed in jobs that demand high skills which are frequently upgraded to keep pace with evolving technological needs of industries.[94] Therefore, in addition to public spending on basic education, the East Asian economies also allocated funding to post-secondary education prioritized for technical and vocational skills for enhancing scientific and technological knowledge. Moreover, policy initiatives were taken to import education services[95] on a higher scale specifically in sophisticated vocational and technical areas.[96]

In Pakistan, however, weak state of education has become a constraint to the prospects of harnessing the demographic dividend. According to Labour Force Survey (LFS) 2021, about 27 million children between the ages of 5-14 were illiterate in 2021, and around 10 million children aged 10-14 only had primary education. Unless these children are provided education later on in their lives, this illiterate and little educated cohort would translate into an estimated 21 percent of projected working age population in 2031.[97] This would be in addition to 57 million people (or 33 percent of the projected working age population) in 2031 who are either illiterate or only have primary education, from the age cohorts that are already in the 2021 workforce and would still be within the working age in the next ten years. These estimates necessitate a substantial increase in public expenditure on education including technical and vocational training.

In comparison to the estimated need to spend 5.7 percent of GDP to increase the quantity and quality of teachers and improve the infrastructure of educational institutions,[98]

[94] A. Jankowska, A. Nagengast, and J.R. Perea, (2012). *The Product Space and the Middle-Income Trap: Comparing Asian and Latin American Experiences*. OECD Development Centre Working Paper No. 311, Paris: OECD Publishing.

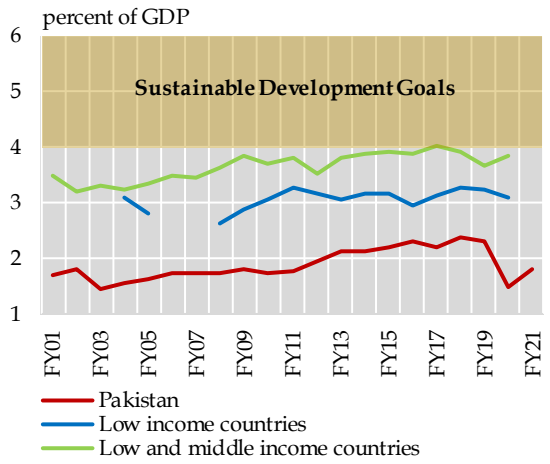
[95] These imports include payments made for the students studying abroad that usually include tuition and living expenses. Source: K. Larsen, J. P. Martin and R. Morris (2002). "Trade in educational services: Trends and emerging issues." *The World Economy*, 25(6), 849-868.

[96] World Bank (1993). *The East Asian Miracle. Economic Growth and Public Policy*. World Bank Policy Research Report. Washington D.C.: World Bank.

[97] The number for population with no education or primary education is taken from Labor Force Survey (2020-21). Projected working age population (173.3 million) is based on the medium-fertility variant. Source: UN's World Population Prospects, 2022.

[98] E. Hanedar, S. Walker, and F. Brollo (2021). Pakistan: *Spending Needs for Reaching Sustainable Development Goals (SDGs)*. Washington D.C.:IMF

Total Spending on Education **Figure 7.22**

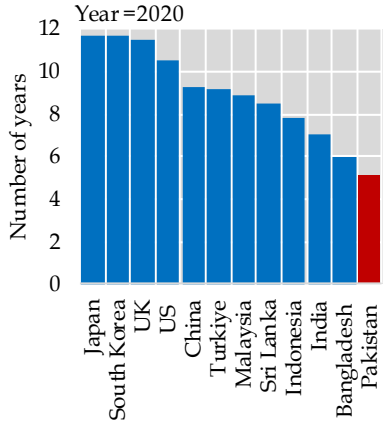


Source: Ministry of Finance, World Bank, United Nations

spending on education in Pakistan has consistently remained below 2.5 percent of GDP. This is the lowest among South Asian economies and much less than the Sustainable Development Goals (SDG) **(Figure 7.22)**.[99] In addition, improvement in the efficiency of education spending is crucial to curtail the expenditure leakages. In this regard, the challenge of ghost schools, high teacher absenteeism, and proxy teachers requires special attention. Teachers' salaries are estimated to account for around seventy to eighty percent of provincial education budgets. In light of this, estimates of 30,000 to 40,000 ghost schools in the country require urgent attention.[100] Although efforts are being made at provincial level to minimize the number of absent teachers, considerable efforts are needed to improve teacher management and quality.[101]

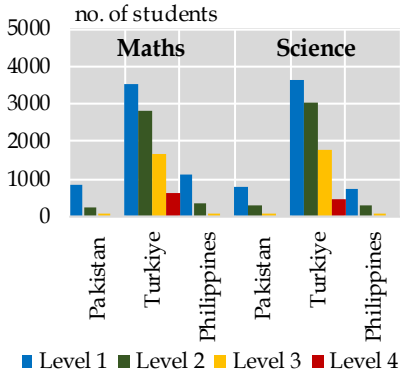
Furthermore, education quality at the primary and secondary school level has remained marginal, as significant proportion of public spending on education has been allocated to the provision of basic infrastructure.[102] For instance, in terms of Learning Adjusted Years of Schooling (LAYS) indicator that captures both the quality and quantity of education attained in years of schooling, Pakistan's position is comparatively weak relative to peer

Learning Adjusted Years of Schooling (LAYS) **Figure 7.23a**



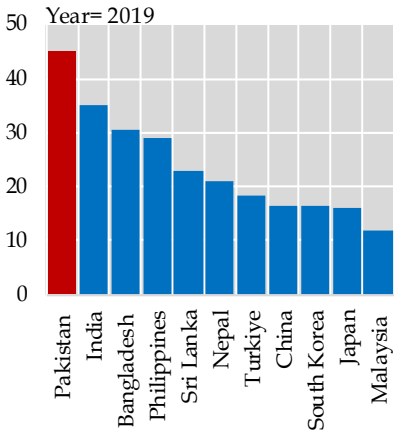
Source: World Bank

Performance of the primary level students appeared in the Mathematics and Science Assessment TIMSS (2019) **Figure 7.23b**



Source: United Nations Educational, Scientific and Cultural Organization

Pupil to Teacher Ratio at Primary Level **Figure 7.23c**



Source: World Bank

The estimate is line with Education 2030 Framework for Action of Sustainable Development Goals, the governments need to spend 4 to 6 percent of GDP (add SDG source).

[99] Ministry of Finance (2020). *Pakistan Economic Survey*. Islamabad: MoF

[100] N. Naviwala (2016). *Pakistan's Education Crisis: The Real Story*. Wilson Center, Asia Program. Washington D.C.: Woodrow Wilson International Center for Scholars.

[101] Z. Zhongming, L. Linong, Y. Xiaona, Z. Wangqiang, and L. Wei (2019). *School Education in Pakistan: A Sector Assessment*. Manila: Asian Development Bank

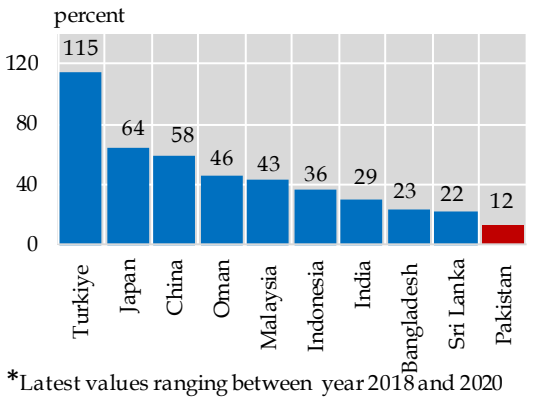
[102] F. Khaliq and W. Ahmad (2016). *Quality and Effectiveness of Public Spending on Education in Pakistan*. Staff Note 02/16. Karachi: State Bank of Pakistan

economies **(Figure 7.23a)**.[103]

Similarly, in areas of math and science, as assessed by the global Trends in International Mathematics and Science Study (TIMSS), students in Pakistan are at much lower learning levels compared to other economies[104] (**Figure 7.23b)**. Likewise, while the quality of teachers is also a challenge in Pakistan due to insufficient teacher training, the country also compares unfavourably in terms of pupil-to-teacher ratio, which means teachers have a larger workload that impairs the quality of education imparted **(Figure 7.23c).** [105,106]

On the tertiary education front, the gross enrollment ratio in the country is markedly poor compared to peer economies, which is a major hurdle in the reaping of demographic dividend, especially in light of growing specialization of academic disciplines and technological progress (**Figures 7.24)**. Similarly, the state of the technical education and vocational training system (TVET) remains weak on account of a host of reasons, which pose a challenge to prospects of demographic dividend. These are discussed in **Section 7.6**.

Total Gross Enrollment Ratio at Tertiary Level **Figure 7.24**



*Latest values ranging between year 2018 and 2020
Data source: World Bank

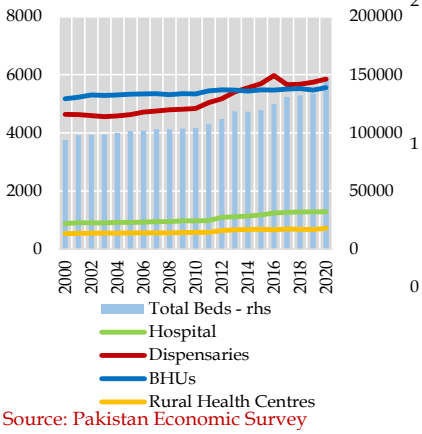
7.5 Health Care and Nutrition

A healthy state of human capital helps reap demographic dividend through two main channels: productivity and life expectancy. In the former sense, gains in the quality of health are estimated to improve an individual's productivity (output per worker) across countries.[107] In fact, about 17 percent of the variation in labour productivity across economies is estimated to be explained by the differences in the countries' health conditions.[108]

In addition to health care, overall nutritional intake also affects productivity. The malnourishment in children from conception to age 2 leads to stunted growth. This is mainly because of poor maternal nourishment or an improper intake of nutrients after birth.[109] It affects cognition and academic performance, which may translate into

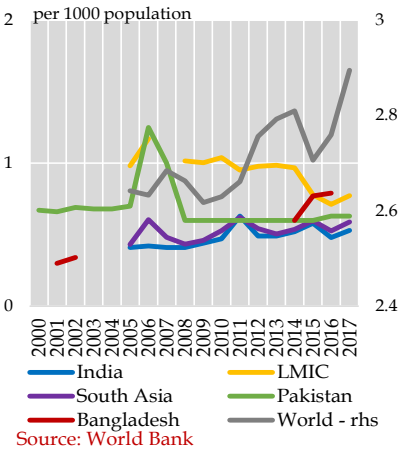
[103] LAYS indicator captures estimates of expected years of education as well as learning outcome assessments based on literacy, numeracy, and reasoning capabilities. Source: World Bank
[104] According to TIMSS, the level 4 or the advanced level refers to advanced mathematical functions at the primary level. Source: UNESCO
[105] D. Shah et. al (2018). *Financing in Education Sector (Public and Private).* Islamabad: Academy of Educational Planning and Management; K.A. Siddiqui, S.H. Mughal, I. A. Soomro, and M. A. Dool (2021). "Teacher Training in Pakistan: Overview of Challenges and their Suggested Solutions." *International Journal of Recent Educational Research*, 2(2), 215-223.
[106] Pupil to teacher ratio refers to number of students taught by a teacher at one point in time. This indicator also explain the class size.
[107] W. D. Savedoff and T. P. Schultz (eds.) (2000). *Wealth from Health Linking Social Investments to Earnings in Latin America.* Washington D.C.: Inter-American Development Bank
[108] D. E. Bloom and D. Canning (2005). *Health and Economic Growth: Reconciling the Micro and Macro Evidence.* Center on Democracy, Development and the Rule of Law.
Working Paper Number 42. Stanford: The Center on Democracy, Development and the Rule of Law, Stanford University
[109] J. Colombo J, B. Koletzko, and M. Lampl (2017) (eds.). *Causes of Stunting and Preventive Dietary Interventions in Pregnancy and Early Childhood*. 89th Nestlé Nutrition Institute Workshop, Dubai, March 2017.

Pakistan's Health Infrastructure



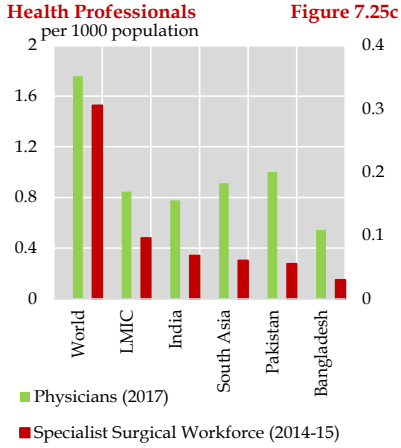
Source: Pakistan Economic Survey

Figure 7.25a Hospital Bed



Source: World Bank

Figure 7.25b Health Professionals



Source: World Bank

Figure 7.25c

decreased productivity and low wages.[110]

Apart from productivity, longevity positively effects economic growth. Estimates show that a one percent increase in the adult survival rate leads to a 2.8 percent increase in labour productivity.[111,112] For instance, increased life expectancy has been estimated to be one of the main drivers of economic growth rates in China and India between 1960 and 2000.[113] In addition, increasing longevity results in a growing need for retirement income which can lead to a high saving rate.[114] The increase in life expectancy is brought about by improvements in public health care in the accessibility of preventive and curative care.[115]

In Pakistan, the number of health infrastructure facilities have increased over the years. For instance, the number of hospitals and dispensaries has increased from 876 and 4,635 in 2000 to 1,289 and 5,849 in 2020, respectively. Resultantly, hospital beds increased from 93907 to 147,112 **(Figure 7.25a)**. However, the gains in the number of beds have not compensated for the population growth in the country, as the bed per population decreased from 0.67 bed per 1000 population in 2000 to 0.63 bed per 1000 population in 2020 **(Figure 7.25b).** The country has also witnessed increased medical professionals, with physicians per 1000 population surpassing the average of lower-

[110] M. A. Mendez and L. Adair (1999). "Severity and Timing of Stunting in the First Two Years of Life Affect Performance on Cognitive Tests in Late Childhood." *The Journal of Nutrition*, Vol. 129, Issue 8, page 1555–1562; T. Woldehanna, J. R. Behrman, and M. W. Araya (2017). The Effect of Early Childhood Stunting on Children's Cognitive Achievements: Evidence from Young Lives Ethiopia. *The Ethiopian Journal of Health Development*, 31(2), 75–84.

[111] Adult survival rate is proportion of 15 years old surviving till the age of 60 years at current mortality rate.

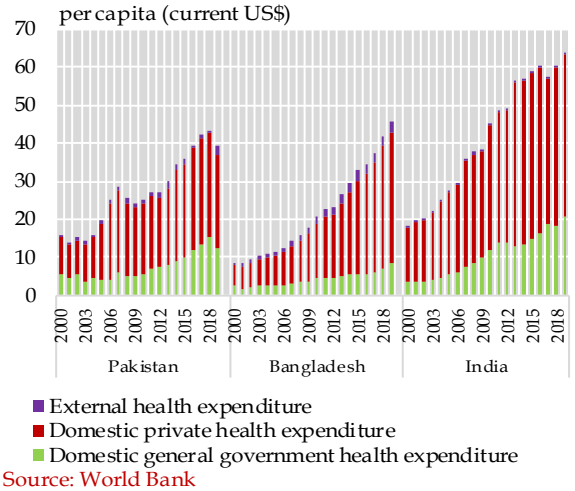
[112] D. E. Bloom and D. Canning (2005). *Health and Economic Growth: Reconciling the Micro and Macro Evidence.* Center on Democracy, Development and the Rule of Law
Working Paper Number 42. Stanford: The Center on Democracy, Development and the Rule of Law, Stanford University

[113] D. E. Bloom, D. Canning, L.Hu, Y. Liu, A. Mahal and W. Yip (2010). "The contribution of population health and demographic change to economic growth in China and India." *Journal of Comparative Economics,* Volume 38, Issue 1, Pages 17-33

[114] D. E. Bloom, D. Canning and B. S. Graham (2002). *Longevity and Life Cycle Savings*. National Bureau of Economic Research (NBER), Working Paper No. w8808. Cambridge, Massachusetts: NBER; T. Kinugasa and A. Mason (2007). "Why Nations Become Wealthy: The Effects of Adult Longevity on Saving." *World Development* 35(1):1-23.

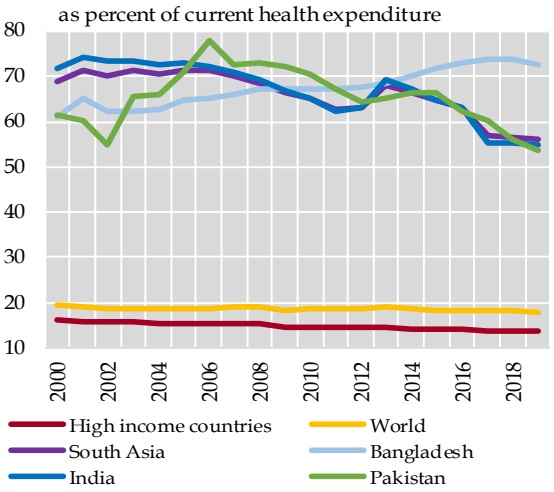
[115] L. Hao, X. Xu, M. E. Dupre, A. Guo, X. Zhang, L. Qiu, Y. Zhao and D. Gu (2020). "Adequate Access to Healthcare and Added Life Expectancy among Older Adults in China." *BioMed Central Geriatrics,* Vol. 20, Article number: 129.; SR. Rasmussen, JL. Thomsen, J. Kilsmark, A. Hvenegaard, M. Engberg, T. Lauritzen, J. Sogaard (2007). "Preventive health screenings and health consultations in primary care increase life expectancy without increasing costs. "*Scandinavian Journal of Public Health*, 35(4):365-72.

Current Health Expenditure **Figure 7.26a**



Source: World Bank

Out of Pocket Health Spending **Figure 7.26b**



middle-income countries. However, the number of specialist surgical workforce per 1000 population in the country is short of regional and global averages **(Figure 7.25c).**

Other indicators also point to weaknesses in the state of health care in the country. The current health expenditure[116] in the country improved from US$ 15.6 per capita in 2000 to US$ 39.5 per capita in 2019, a compound annual growth rate of 4.8 percent **(Figure 7.26a)**. However, during the same time, Bangladesh and India's per capita health spending increased with a compound growth of 8.7 and 6.4 percent. Also, Pakistan's spending remains very small compared to the global average of US$ 1121 per capita.

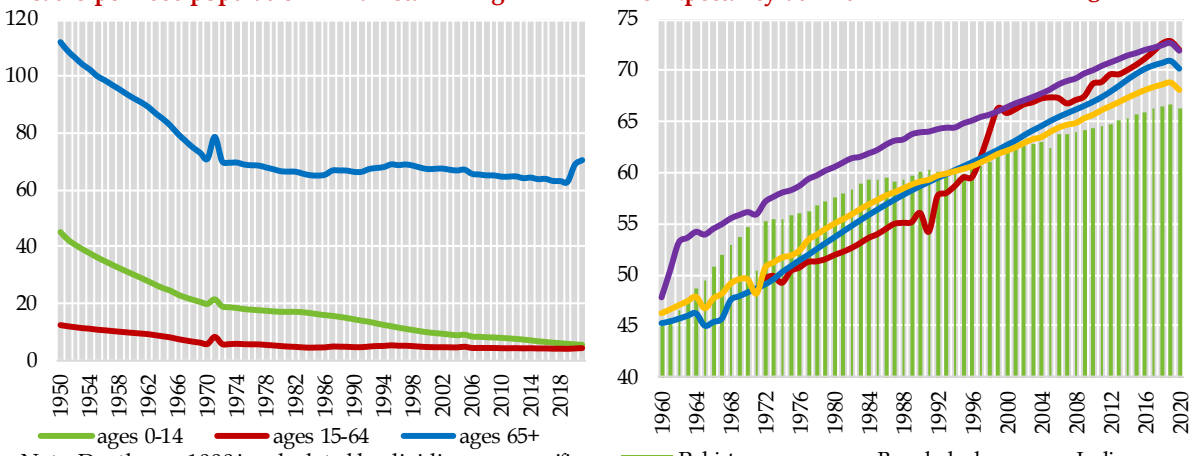
Approximately 61 percent of Pakistan's total health spending in 2019 is private, of which 88 percent is out-of-pocket (OOP) expenditure.[117] Pakistan's OOP as percentage of total current health expenditure is similar to India's and lower than Bangladesh's, but still very high compared to the global average and high-income countries **(Figure 7.26b)**. High OOP spending indicates inequality in the health system with an excessive burden on savings, pushing those on the margins into poverty.[118]

From the perspective of life expectancy, the death rate across all age groups in Pakistan has declined over the years, translating into increased life expectancy in the country, from 45.3 years in 1960 to 67.4 years in 2020 **(Figure 7.27a)**. This has been in part a result of improvements in the number of medical professionals and per capita health spending. However, similar to other health indicators, life expectancy in Pakistan is still lower than other South Asian economies **(Figure 7.27b)**.

Another challenge to the reaping of demographic dividend in Pakistan relates to stunting. Stunting, defined as low height for age, is an indicator of chronic malnutrition in children, which leads to a loss in human capital and productivity. It limits cognitive development and lowers educational attainment and learning capacity.[119,120] It is

[116] The current health expenditure includes private, public and external spending on health in a country.
[117] Out-of-pocket is defined as expenses paid directly out of the pocket of households.
[118] F. S. Jalali, P. Bikineh and S. Delavari (2021). "Strategies for Reducing out of Pocket Payments in the Health System: A Scoping Review." *Cost Effectiveness and Resource Allocation,* vol. 19, article no. 47.; A. Wagstaff, P. Eozenou and M. Smitz (2020). "Out-of-Pocket Expenditures on Health: A Global Stocktake." *The World Bank Research Observer*, Volume 35, Issue 2
[119] L. Oot, K. Sethuraman, J. Ross, and A. E. Sommerfelt (2016). "The Effect of Chronic Malnutrition (Stunting) on Learning Ability, a Measure of Human Capital: A Model in Profiles for Country-Level Advocacy." *Technical Brief* Food and Nutrition Technical Assistance III Project
[120] K. G. Dewey and K. Begum (2011). Long-Term Consequences of Stunting in Early Life. *Maternal and Child Nutrition,* Vol 7, Issue S3

Deaths per 1000 population in Pakistan **Figure 7.27a** **Life Expectancy at Birth** **Figure 7.27b**



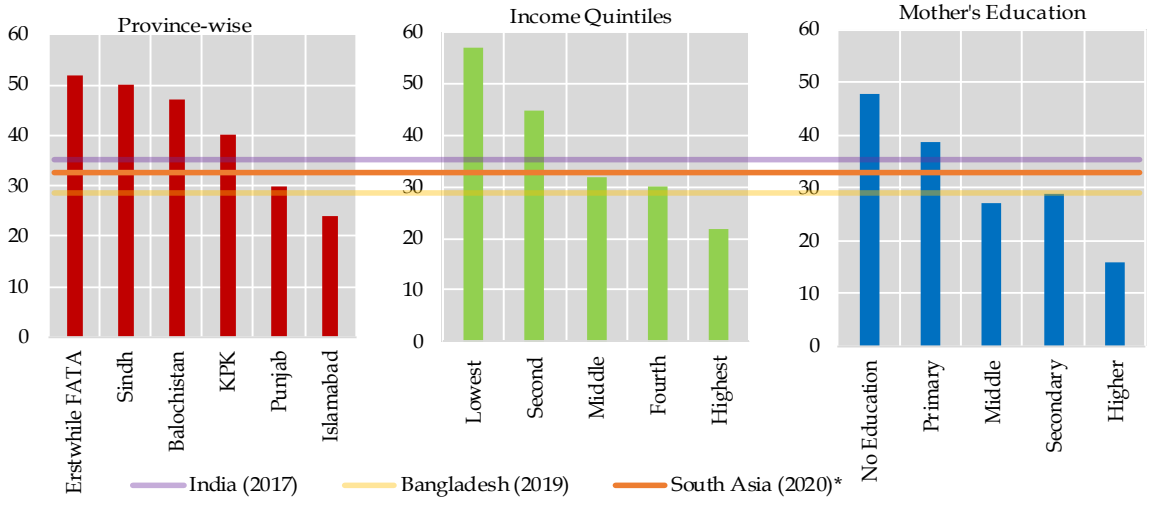
Note: Deaths per 1000 is calculated by dividing age-specific total deaths by respective age groups population in thousands.

Source: UN Population Division, World Population Prospects, 2022

imperative to prevent stunting as fully reversing its effects is difficult.[121]

Although Pakistan's stunting rate has decreased from 62.5 percent in 1986 to 37.6 percent in 2018, it is still among the top 20 most stunted countries in the world.[122] At the provincial level, 50 percent of children in Sindh are stunted, and even the best performing province, Punjab, remains behind Bangladesh's national average (**Figure 7.28).** Since stunting affects the poorest and least educated the most, who also have high TFR, this becomes a vicious cycle where individual productivity remains weak leading to lower wages, malnutrition, poverty, and lack of

Prevalence of Stunting in Pakistan **Figure 7.28**



*The average is based on most recent surveys of the South Asian Countries

Source: PDHS 2017-18 and UNICEF, WHO and World Bank's Joint Child Malnutrition Estimates

[121] J. L. Leroy, E. A. Frongillo, P. Dewan, M. M. Black, R. A Waterland (2020). "Can Children Catch up from the Consequences of Undernourishment? Evidence from Child Linear Growth, Developmental Epigenetics, and Brain and Neurocognitive Development." *Advances in Nutrition*, Volume 11, Issue 4.; M. Shekar, J. Kakietek, J. D. Eberwein, and D. Walters (2017). *An Investment Framework for Nutrition: Reaching the Global Targets for Stunting, Anemia, Breastfeeding, and Wasting*. Directions in Development. Washington, DC: World Bank.

[122] Source: World Bank

education which fuel each other and prevent the TFR from falling to give way to demographic window.[123]

The fact that detrimental impact of stunting on cognition and learning abilities cannot be fully reversed means the stunted children carry its adverse effects in their adult life as well, and thus implying risks of structurally impaired labour productivity. Based on various nationally representative surveys of stunting conducted in different years between 1986 and 2018, about 48 million adults in the year 2033 would be classified as those who were estimated to be suffering from stunting in their childhood years. This equals about 27 percent of the estimated 181 million working age population in 2033. **(Table 7.1)**

Estimates of Adult Population in 2033 Affected by Stunting in their Childhood years **Table 7.1**

Year	Stunting Rate for Children Under 5	Total Under-5 Pop.**	Total Stunted Pop.	Ages of Stunted Pop. in 2033
	(percent)	(millions)	(millions)	
1986	62.5	16.2	10.1	47-52
1992	42.7	19.5	8.3	41-46
2001	41.4	22.1	9.2	32-37
2011	43.6	24.4	10.6	22-27
2018	37.6	27.3	10.3	15-19
Total		**109.5**	**48.5***	

* These estimates do not account for the mortality rate, which may decrease the number. However, because stunting estimates are available from 1986 onward, and are unavailable at regular intervals, the number may increase as it does not include the estimates of stunted population who would be in age cohorts of 53-64, 38-40, 28-31, and 20-21 in 2033.
** Pop. refers population

Source: Calculations based on UNICEF, WHO and World Bank's Joint Malnutrition Estimates and UN Population Division, World Population Prospects

7.6 Enabling Economic Policy Environment

In addition to investments in education and health to boost productivity, countries that have benefitted from demographic dividend have created an enabling economic policy environment to reap those dividends. In particular, favourable macroeconomic environment, including high saving and investment; sustainable fiscal and external deficits; openness to trade; pro-industrial policies; efficient markets (including that of labour market); and a healthy state of competition have been found to be important for materializing the demographic dividend.[124]

Moreover, while the contribution of specific governance enhancing policy interventions on demographic dividend has not been measured, studies have shown that stability and security of administrative systems helped East Asian economies in achieving demographic dividend. This is because good governance and quality institutions, primarily revolving around accountability, government effectiveness, regulatory quality, rule of law, stability, and control of corruption, act as catalysts for economic growth necessary for reaping the opportunity offered by demographic window.[125]

In Pakistan, the overall economic policy environment is marked by various challenges. There are recurring episodes of macroeconomic instability amid high cost and poor accessibility of utilities, economic policy uncertainty, low savings and investment rate and low incidence of trade openness. The macroeconomic instability also reflects structural and institutional impediments, including inadequate market development, lack of competition, and dysfunctional operational infrastructure. Moreover, issues in contract enforcement, dispute resolution, legal cover for innovation, and other legal bottlenecks to growth exist in the economy

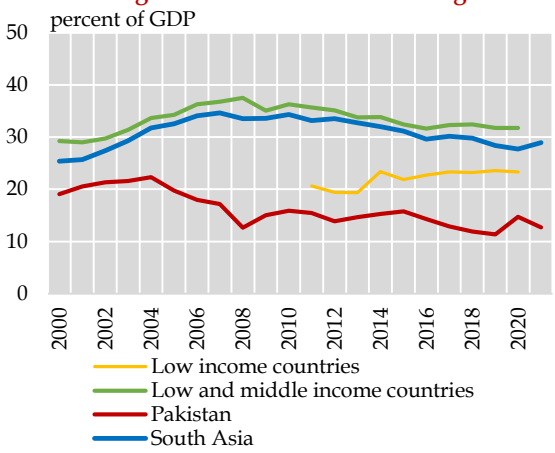
[123] F. Siddiqui, R. A. Salam, Z. S. Lassi and J. K. Das (2020). The Intertwined Relationship between Malnutrition and Poverty. *Frontiers in Public Health.* Vol. 8
[124] J. Page (1994). *The East Asian Miracle: Four Lessons for Development Policy.* NBER Macroeconomics Annual, 9, 219-269. Massachusetts: MIT Press
[125] K. Patierno, S. Gaith, and E. L. Madsen (2019). *Which Policies Promote a Demographic Dividend? An Evidence Review.* Washington D.C.: Population Reference Bureau; World Bank (2017). *Governance and the Law: World Development Report*. Washington D.C.: World Bank

alongside incidences of corruption.[126] While all these challenges need to be addressed from the perspective of demographic dividend, the following two challenges particularly stand out.

Savings

As discussed earlier, one of the key dividends accruing from a favourable age structure is higher savings per capita.[127] Higher savings are positively linked to the country's capacity for investment stimulating economic growth; indeed, the high growth rates of East Asian economies, which were the first countries in Asia to achieve the demographic transition, were helped by higher savings.[128] A deep domestic financial system and higher savings rates also helped Malaysia and Thailand to finance their deficits while avoiding inflationary financing.[129] The need to have high savings underscores the significance of greater financial inclusion as well. This is important because the absence of inclusive financial systems amplifies income inequality and slows down economic growth.[130]

Gross Savings **Figure 7.29**



Source: World Bank

In Pakistan, however, formal savings are substantially small on account of low levels of income, rate of return, and public investment amid high inflation **(Figure 7.29)**.[131] Low savings leads to lower investments that are affected by shallow financial markets, a large informal economy, and other institutional and administrative challenges, including structural weaknesses in revenue mobilization that contribute to low public savings.[132] Pension, insurance, and social security systems also remain weak in the country due to institutional and capacity-building challenges in the country's insurance and pension landscape and the pension framework.[133] This presents a two-fold challenge: (a) it contributes to the problem of low levels of long term savings needed to finance long-term projects; and (b) puts the post-retirement life of working age population at risk.

Although, the level of financial inclusion in the country has improved over the years, Pakistan ranks low compared to peer economies, where

[126] State Bank of Pakistan (2019). *Factors Constraining Investments in Pakistan: Beyond the Macroeconomics*. Annual Report on the State of Pakistan's Economy. Karachi: SBP; State Bank of Pakistan (2015). *What has Caused Stagnation in Pakistan's Exports*. Annual Report on the State of Pakistan's Economy. Karachi: SBP; State Bank of Pakistan (2021). *Special Economic Zones in Pakistan: Isles of Excellence or Labs for Policy Reforms.* Annual Report on the State of Pakistan's Economy. Karachi: SBP; State Bank of Pakistan (2020). *The State of Competition in Pakistan.* Second Quarterly Report on the State of Pakistan's Economy. Karachi: SBP; Planning Commission (2011). *Pakistan: Framework for Economic Growth*. Islamabad: Planning Commission

[127] This stage of economic growth is called the ***second demographic dividend*** occurring in the later stage of the demographic transition.

[128] P. R. Masson, T. Bayoumi, and H. Samiei (1995). *Saving Behavior in Industrial and Developing Countries.* In Staff Studies for the World Economic Outlook. International Monetary Fund.

[129] . Page (1994). *The East Asian Miracle: Four Lessons for Development Policy.* NBER Macroeconomics Annual, 9, 219-269. Massachusetts: MIT Press

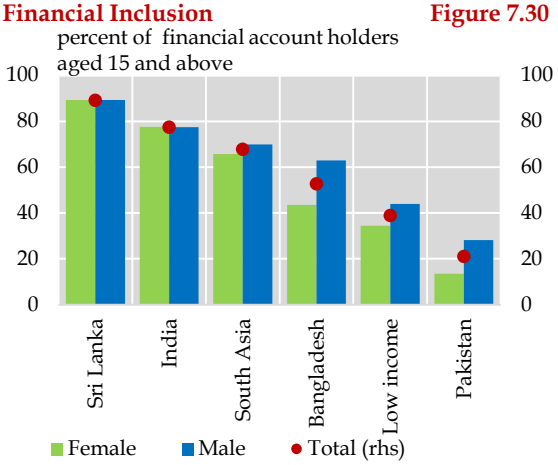
[130] A. Demirguc-Kunt and R. Levine (2009). "Finance and Inequality: Theory and Evidence." *Annual Review of Financial Economics*, 287-318

[131] A. Ali (2016). *Saving and Investment in Pakistan*. SBP Staff Notes 01/16. Karachi: State Bank of Pakistan

[132] State Bank of Pakistan (2019). *Factors Constraining Investments in Pakistan: Beyond the Macroeconomics.* Annual Report on the State of Pakistan's Economy. Karachi: SBP

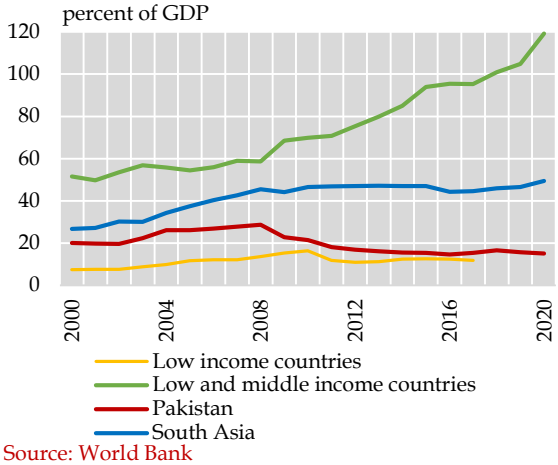
[133] Asian Development Bank. *Strengthening Pakistan's Pension and Insurance Systems*. Social Protection Project Briefs. Manila: ADB

Financial Inclusion **Figure 7.30**



Source: World Bank

Credit to Private Sector **Figure 7.31**



Source: World Bank

gender disparity is rather large **(**Figure **7.30).** Moreover, overall credit to private sector in the country also needs substantial improvement **(Figure 7.31),** as the credit largely flows to big corporates instead of individuals, and micro, small and medium enterprises (MSMEs). Consequently, individuals and MSMEs excessively rely on their own savings (retained earnings or owners' personal funds) and informal lending channels that are expensive and unreliable.[134] The combined impact of these trends present a challenge to the increasing youth bulge as savings remain insufficient to meet the growing needs for public and private investments. However, recent initiatives taken by the State Bank of Pakistan to incentivize SME finance, housing, and Islamic banking are steps in the right direction.[135]

Furthermore, in terms of total investment to GDP, Pakistan stands lowest in the region with around 15 percent of GDP. In comparison, total investments in India and Sri Lanka are more than 30 percent of their respective GDP. This is primarily attributed to low domestic savings in the country amid high degree of reliance on foreign direct investments, low business growth, macroeconomic instability, and policy uncertainty.[136]

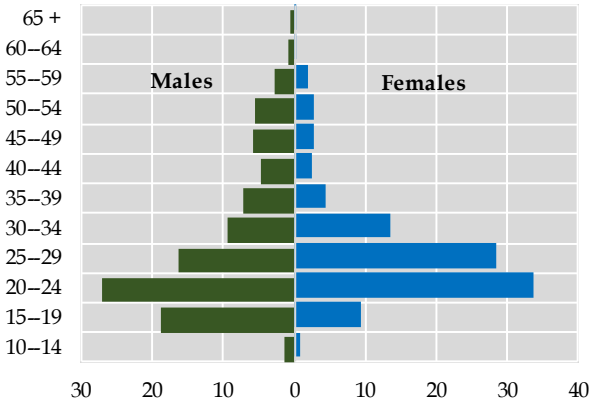
Opportunities for youth

The youth bulge of a country, characterized by a rising working age population, can help reap demographic dividend through inclusive economic growth and better utilization of resources. However, to achieve this, youth has to have opportunities for employment and entrepreneurship in productive sectors of the economy, and is sufficiently educated or skilled to contribute to productivity gains accompanied by wage growth.[137] In Pakistan, however, five key challenges limit the potential of youth in the country.

First, the pace of economic growth has been insufficient to absorb the increasing number of youth joining the workforce. In contrast to the need to grow at least 6 or 7 percent to be able to offer work opportunities to the youth, [138]

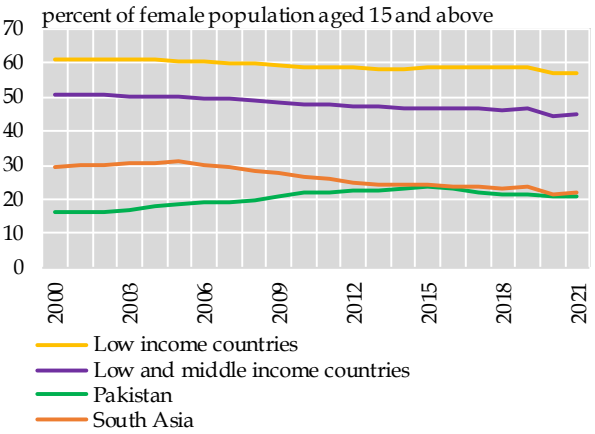
[134] SBP (2006). *Trends in Financial Savings*. Financial Stability Review. Karachi: SBP; State Bank of Pakistan (2020). *The State of Competition in Pakistan*. Second Quarterly Report on the State of Pakistan's Economy. Karachi: SBP
[135] SBP (2018). *Monetary Policy and Inflation.* Annual Report on the State of Pakistan's Economy. Karachi: SBP; State Bank of Pakistan. *Incentive Schemes for SMEs and Other Sectors.* Karachi: SBP. www.sbp.org.pk/Incen-others/index.asp
[136] U. Ahmad, A. Urooj, and U. Zia (2022). *Business and Investment Issues in Pakistan* (No. 2022: 91). Pakistan Institute of Development Economics.
[137] S. Dewan and E. Ekkehard (Winter 2020). "Rethinking the World of Work". *Finance and Development* (www.imf.org/external/pubs/ft/fandd/2020/12/rethinking-theworld-of-work-dewan.html).
[138] Planning Commission (2011). *Pakistan: Framework for Economic Growth*. Islamabad: Planning Commission; World Bank (2018). *South Asia Economic Focus, Spring 2018: Jobless Growth?* Washington DC: World Bank

Percentage of Unemployed Population in Pakistan **Figure 7.32**



Source: Labor Force Survey 2020-21

Female Labor Force Participation **Figure 7.33**



Source: World Bank (ILO modeled estimates)

Pakistan's GDP growth has averaged only 4.3 percent between 2001-2022.[139] As a result, unemployment in youth segments of the population has been particularly high (**Figure 7.32).**

Second, female unemployment is higher than that of men, whereas female labour force participation rate in the country is only around 20 percent as against almost 78 percent for male and is much lower compared to peer economies **(Figure 7.33**). Considering that the share of women in Pakistan's total population is around 49 percent,140 this implies that women's contribution to the economy needs to grow if Pakistan is to reap the demographic dividend.[141]

Amongst other things, this requires a change in social norms and cultural attitudes, including change in the notion, "women should not be allowed to work outside house," and parental aspirations that imagine girls' lives to be confined to housework and childcare.[142] Moreover, physical proximity to educational and training facilities and work places, as well as a safe environment, such as low crime, also need to be improved to lower the restrictions on women's physical mobility.[143] Indeed, women who have and demonstrate agency have both lower fertility rate, and are better able to overcome societal constraints to pursue education, skills and job opportunities.[144]

[139] The GDP growth of 2001-16 is calculated by taking 2005-06 as base period; while GDP growth rates for 2017-22 are based on 2015-16 as the base period. Source: National Income Accounts. Islamabad: Pakistan Bureau of Statistics (www.pbs.gov.pk/sites/default/files/tables/national_accounts/2021-22/Table_1.pdf)

[140] Population Census (2017). Islamabad: Pakistan Bureau of Statistics.

[141] World Bank (2019). *Pakistan @ 100 – Shaping the Future.* Washington D.C.: World Bank

[142] A. L. Minardi, M. Akmal, L. Crawfurd, and S. Hares. (2021). *Promoting Gender Inequality in Pakistan Means Tackling Both Real and Misplaced Gender Norms.* Centre for Global Development (CGD) Blog Post. Washington D.C.: CGD.

[143] E. Field and K. Vyborny (2022). *Women's Mobility and Labor Supply Experimental Evidence from Pakistan.* Asian Development Bank Economics Working Paper Series No. 655. Manila: ADB; and A. Cheema, A. I. Khwaja, M F. Naseer and J. N. Shapiro (2020). *Glass Walls: Experimental Evidence on Access Constraints Faced by Women*. Working Paper.

[144] A. Cheema, A. I. Khwaja, M F. Naseer and J. N Shapiro (2020). *Glass Walls: Experimental Evidence on Access Constraints Faced by Women,* Working Paper; G. Samari (2019). "Education and Fertility in Egypt: Mediation by Women's Empowerment." *SSM - Population Health* Volume 9; A. Sayeed and N. Ansari (2019). *Women's Mobility, Agency, and Labour Force Participation in the Megacity of Karachi*, International Growth Centre (IGC), Reference Number: C-37429-PAK-1. London: IGC and Asian Development Bank (2016). *Policy Brief on Female Labor Force Participation in Pakistan*, Policy Brief No. 70. Manila: ADB

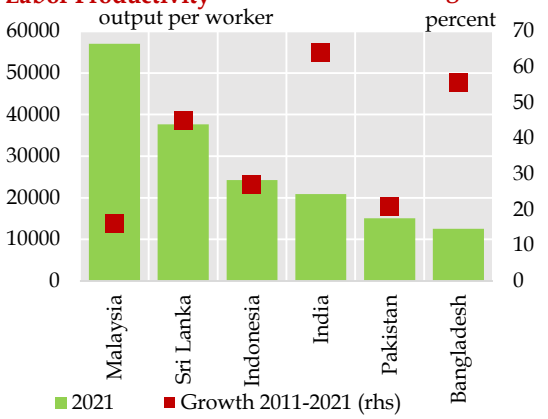
The third challenge relates to the quality of work opportunities available vis-à-vis productive sectors of the economy. At the one end, informal employment is notably high in Pakistan.[145] Around three quarters of the total employed people work in the informal sector,[146] whereas almost 71 percent of employed women work in the informal sector.[147] The labour force working in the informal sector is predominantly unpaid as 52 percent of employed young women are unpaid family workers mostly in the agricultural sector.[148] Furthermore, around 47.6 percent of labour in the informal sector is paid below the minimum wage due to their non-specialized skillset, having lower or no education and training.[149] High degree of informality in job market leaves the workforce vulnerable to shocks, leading to lower savings and inadequate access to health and education.

At the other end, the share of industry in employment hovered around 21 percent for the period of 1991-2019,[150] as investments have been directed to less productive sectors, such as real estate,[151] or low value-added sectors including primary agriculture commodities or low-tech manufacturing (for e.g. cotton fabric and light engineering).[152] This prevents growth in work opportunities for youth in highly productive areas and constrains the growth in per capita income.

In recent years, the developments in the country's Information and communication technology (ICT) industry are promising, with growth in ICT exports, domestic e-commerce industry, technology start-ups alongside an expansion in call centers, and business process outsourcing. However, a policy focus on building the right skill set holds the key.[153] The trends in the labour market are evolving and the global demand is following high cognitive and technical skills including analytical thinking, adaptability, and creativity. Upgrading of workers' skills along these lines will play an instrumental role in increasing productivity.[154]

The fourth key challenge revolves around skilled and productive labour. Pakistan's labour productivity is weak compared to peer economies and has been growing at a slow pace **(Figure 7.34)**. In addition to insufficient educational attainment (as discussed earlier),

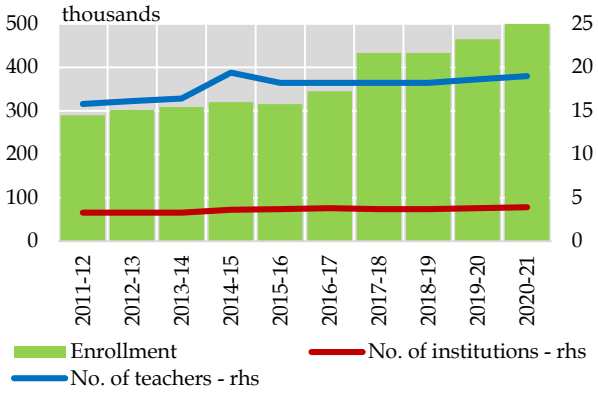
Labor Productivity **Figure 7.34**



Note: GDP constant 2017 international $ at PPP
Source: International Labour Organization

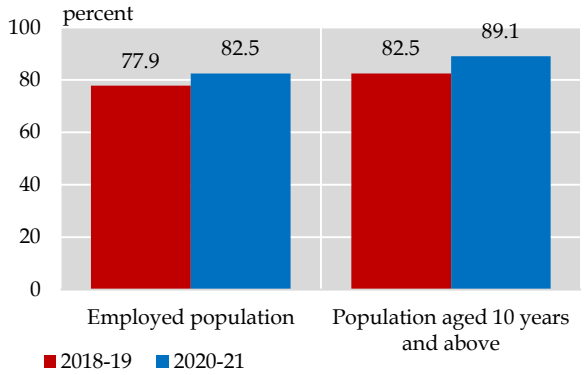
[145] ILO (2017). *Pakistan Hidden Workers: Wages and Conditions of the Home-based Workers and the Informal Economy*. Geneva: ILO
[146] Pakistan Bureau of Statistics (2021). *Labour Force Survey*. Islamabad: PBS
[147] Asian Development Bank (2020). *Pakistan, 2021-2025: Lifting Growth, Building Resilience, Increasing Competitiveness*. Country Partnership Strategy. Philippines: ADB
[148] UN Women (2020). *Status Report: Young Women in Pakistan*. New York: United Nations
[149] M. Ali Choudhary, S. Mahmood, and G. Zoega (2016). *Informal Labour Markets in Pakistan*. SBP Working Paper No .75. Karachi: SBP
[150] Source: World Development Indicators, World Bank.
[151] State Bank of Pakistan (2019). *Factors Constraining Investments in Pakistan: Beyond the Macroeconomics.* Annual Report on the State of Pakistan's Economy. Karachi: SBP
[152] State Bank of Pakistan (2020). *Global Value Chains – Implications for Pakistan*. First Quarterly Report on the State of Pakistan's Economy. Karachi: SBP
[153] State Bank of Pakistan (2019). *Performance of ICT Exports of Pakistan*. First Quarterly Report on the State of Pakistan's Economy. Karachi: SBP
[154] World Economic Forum. (2020, October). *The Future of Jobs Report*. Geneva, Switzerland: World Economic Forum.

Technical and Vocational Education in Pakistan **Figure 7.35a**



Source: Pakistan Ecoonmic Survey (various issues)

Percentage of Population who Have Not Received Technical and Vocational Education **Figure 7.35b**

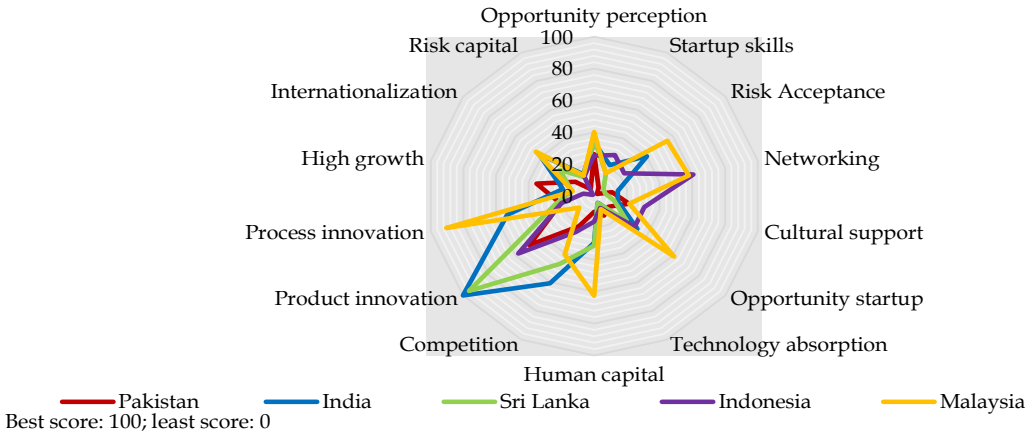


Source: Labour Force Survey 2020-21.

another key factor behind the trend in Pakistan's labour productivity is the gap in technical and vocational training (TVET) and life-long learning (LLL) systems. Although there is sufficient evidence that labour training helps increase worker productivity, the TVET system in Pakistan faces a myriad of challenges including supply-demand mismatch, inadequate geographic coverage, and shortage of TVET teacher and facilities **(Figure 7.35a)**. In addition, technology at TVET centres is out of date, and the system is marked by ineffective coordination between the formal TVET sector and industry players.[155]

In order to train an estimated youth cohort of about 6 million each year, to help materialize the country's demographic dividend potential, there is a need of a minimum 45,000 training institutes and 200,000 TVET teachers as an addition to the existing system. In contrast, slightly more than 0.4 million registered training seats are currently available in 3,740 training institutes with total staff strength of 18,207 trained teachers in the formal TVET sector.[156] According to LFS, around 83 percent of the employed population has not received any sort of technical or vocational training **(Figure 7.35b)**.

Enabling Factors of Entrepreneurship (2018) **Figure 7.36**



Best score: 100; least score: 0

Source: Global Entrepreneurship and Development Institute

[155] State Bank of Pakistan (2020). *Technical and Vocational Education and Training (TVET) in Pakistan: Issues and Challenges for Productivity Enhancement*. Third Quarterly Report on the State of Pakistan's Economy. Karachi: SBP

[156] International Labor Organization (2019). State of Skills – Pakistan (1919-2019). Geneva: ILO

This necessitates increased public and private investment in skill development. However, interventions in vocational training should not be construed as a substitute for academic education. Indeed, evidence suggests that substituting academic schooling with vocational schooling may in fact have negative consequences on the development of human capital,[157] whereas labour market returns for TVET graduates also depend on the type of individuals targeted by these programs, such as their level of prior education, the degree of TVET certification, and the qualification of teachers.[158]

The fifth challenge relates to entrepreneurship which is a prime stimulator for improving the labour market and job creation.[159] In this context, weak culture of entrepreneurship in Pakistan needs to be turned around. At the one end, the government's engagement in business needs to be rationalized. Since entrepreneurship is understood as the combination of risk taking and innovation, the intervening role of government in the country inhibits the growth of entrepreneurship.[160] At the other end, the environment ought to be made suitable for young entrepreneurs. In 2019, the Global Entrepreneurship Index ranked Pakistan 109th out of 137 economies, where in terms of enabling factors for entrepreneurship, such as startup skills, cultural support, product and process innovation, technology absorption and so forth, Pakistan ranks lower than its peer economies **(Figure 7.36)**.[161]

While there has been some improvement in this regard such as establishment of incubation centers in the country's leading educational institutions, a nationwide collaboration is needed to promote the culture of innovation and creative thinking given that the world is rapidly moving towards knowledge economy. Furthermore, without quality education, the promise of entrepreneurship seems implausible. [162]

7.7 Final Remarks

Whilst recognizing that favourable demographic structure is not the only driver of accelerated economic growth and development, the foregoing discussion on the promise and challenge of Pakistan's demography prompts two main observations that warrant the attention of both public and private sector stakeholders of the economy.

The first relates to Pakistan's need to increase the pace of reduction in TFR. While each country is unique in its experience of demographic transition and achievement of demographic dividend, changing the age structure through a consistent decline in fertility rates is the first step towards achieving demographic dividend. Without a decline in TFR, the demographic window does not even open, according to the UN's approach discussed in section two. Ergo, the inability to reduce TFR in Pakistan will prevent youth dependency from falling to the level where more working-age adults support a relatively smaller population of children. In addition, if TFR does not decline at a fast pace

[157] P. Loyalka, X. Huang, L. Zhang, J. Wei, H. Yi, Y. Song, Y. Shi, and J. Chu (2016). "The Impact of Vocational Schooling on Human Capital Development in Developing Countries: Evidence from China." *World Bank Economic Review* 30(1):143-70.
[158] P. Loyalka, X. Huang, L. Zhang, J. Wei, H. Yi, Y. Song, Y. Shi, and J. Chu (2016). "The Impact of Vocational Schooling on Human Capital Development in Developing Countries: Evidence from China." *World Bank Economic Review* 30(1):143-70, and P. Vandenberg and J. Laranjo (2020). *The Impact of Vocational Training on Labor Market Outcomes in the Philippines.* Asian Development Bank (ADB) Economics Working Paper Series, NO. 621. Manila: ADB.
[159] R. Nallari., B. Griffith, Y. Wang, S. Andriamananjara, D.H. Chen, and R. Bhattacharya (2011). *Entrepreneurship, Growth, and Job Creation*. Washington D.C.: World Bank
[160] N. U. Haque (2007). *Entrepreneurship in Pakistan (No. 22190)*. East Asian Bureau of Economic Research.
[161] Global Entrepreneurship Research Association (2019). *Global Entrepreneurship Monitor*. London: GERA; Global Entrepreneurship and Development Institute (2018*). Global Entrepreneurial Index*. Washington D.C.: GEDI
[162] A. Najam and F. Bari (2017). Unleashing the potential of a young Pakistan. United Nations Development Programme, Pakistan.

to help reap the demographic dividend, Pakistan may be at a long term risk of both high youth and old age dependency, as those currently in the working age grow past the age of 65.

To this end, family planning programmes need to be expanded and strengthened, particularly in socio-economic and geographic clusters that have high TFR. These may be explored in partnership with the private sector through various latest approaches, such as voucher schemes for a targeted approach,[163] and clubbed for programmes focusing on maternal, infant and child health for both ease of administration and wider acceptance.

Another approach worth considering is civil society engagement to increase awareness of the challenges brought to the fore by high TFR. The costs and benefits of fertility are not only internal to individual families; it imposes a burden and advantages on others in the economy. These externalities, negative or positive, are a legitimate basis for public deliberation on the subject.

Such deliberations, which can be facilitated through media and corporate social responsibility programmes, may dwell on modern realities where increasingly complex economies require an extended length of formal education for them to be productive. Whether these costs fall on private revenues and savings (e.g., parents) or public, the corollary of high TFR is high total spending on education, which may be spent elsewhere if TFR were to be lower. This realization, along with rising material aspirations and rational responses to market signals, is already making large families relatively less common in high-income segments in Pakistan. By implication, wealthy households may be quicker to reap the benefits of favourable working age compared to poor who have higher TFR, and thus contributing to income and wealth inequalities.

Since demographic transition and ensuing the demographic dividend is a relatively long and slow process, it often escapes the attention of the public and policymakers. In recognition of this, annual reporting of input and output demographic indicators across the country; detailed assessments of various federal and provincial TFR-related programmes; and other ancillary affairs would help keep a spotlight on the country's population and TFR challenge. This would be in line with the recommendations of the National Task Force constituted by the Supreme Court of Pakistan,[164] subsequently approved by the Council of Common Interest, that emphasized the need for a national narrative to reach a consensus for TFR reduction. Such a consensus helped several other economies, such as Turkiye, Malaysia, Indonesia and Iran, to fast-track fertility transitions several decades ago.[165]

The second main observation relates to the distinction between youth population and demographic dividend. There are two main aspects of this distinction. First, while the demographic window offers potential for fast-paced economic growth and development due to changes in population structure, a large youth population without the existence of a favourable age-structure does not automatically translate into accelerated economic growth. Second, even if the ratio of working-age population to dependent population is favourable, dividends from the demographic window are not harnessed without the necessary policies to improve the state of health and education of a country's population and to provide the workforce with necessary opportunities to prosper in productive areas of the economy.

[163] B. Bellows, M. Ali, A. M. Mir (2020). Best Bets: Vouchers for Rights-based, Voluntary Family Planning. Best Bets for Accelerating Family Planning in Pakistan. Islamabad: Population Council, Pakistan.
[164] Supreme Court of Pakistan, Judgment of Human Rights Case No.17599 OF 2018 on the subject of Pakistan's alarming high population growth rate, January 3, 2019, Available at www.supremecourt.gov.pk/downloads_judgements/H.R.C._17599_2018.pdf, accessed on August 05, 2022.
[165] UNFPA (2020). *National Narrative on Population Growth*. Islamabad: UNFPA Pakistan.

In this light, the following stylized facts mentioned in the preceding sections are important. The productivity of about 54 percent of the country's working age population in 2031 is at risk given the current estimates of illiteracy, and low levels of primary education attainment in both those that are currently in working age and those that will enter the workforce in ten years. Likewise, about 27 percent of 2033 working age population are projected to be those that were estimated to be suffering from stunting in their childhood years. Considering that the effects of stunting are not fully reversible, this impairs the prospects of fully harnessing the demographic potential.

These risks reinforce the argument for a substantial increase in investments in health and education, including technical and vocational education. These investments are needed to contribute to the decline in TFR, and to set the stage for workforce to take on more technical and higher-paying work opportunities. Delays to this effect or slow takeoff in investments on health and education put the prospects of demographic dividend at risk considering that health and education transitions take a long time to prepare a healthy, well-educated, well-trained workforce.

There is also a need to deepen financial markets, and encourage formal savings alongside growth in financial inclusion, considering that higher savings is an important route to achieving demographic dividend. At the same time, an enabling economic environment created through sound economic and governance policies, including trade openness, rule of law and competitive markets, is necessary to capitalize on the demographic window. Indeed, the degree to which economies have been able to reap demographic dividend depends on their ability to create opportunities for jobs and entrepreneurship for the growing number of young people entering the workforce, particularly in new and emerging technology-oriented fields and other highly productive sectors of the economy that are expected to drive economic growth in the future. The rise of digital technology-led growth in agriculture, manufacturing and service sectors also implies that the education and training of the workforce are evolving and dynamic in nature.

Equally important is the need to reduce gender disparities in educational attainment, labour force participation and opportunities for jobs and entrepreneurship. Implementation of social and economic policies to this end is needed not only to reduce TFR, given the inverse relationship between female education and fertility rates but also to capitalize on the opportunity offered by the demographic window, given that female population is nearly half of total population.